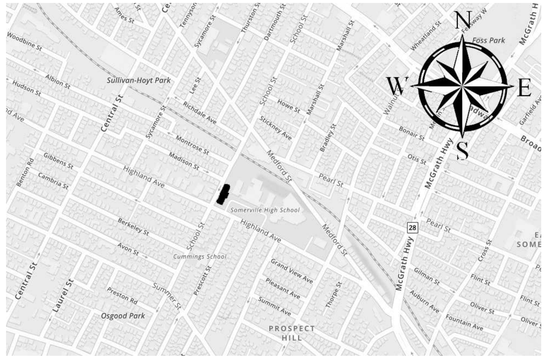
SOMERVILLE CITY HALL BOILER PLANT

93 Highland Ave, Somerville, MA 02143

CONSTRUCTION DOCUMENTS **01/17/2020** **17117**

SMMA
1000 Massachusetts Avenue
Cambridge, MA 02138

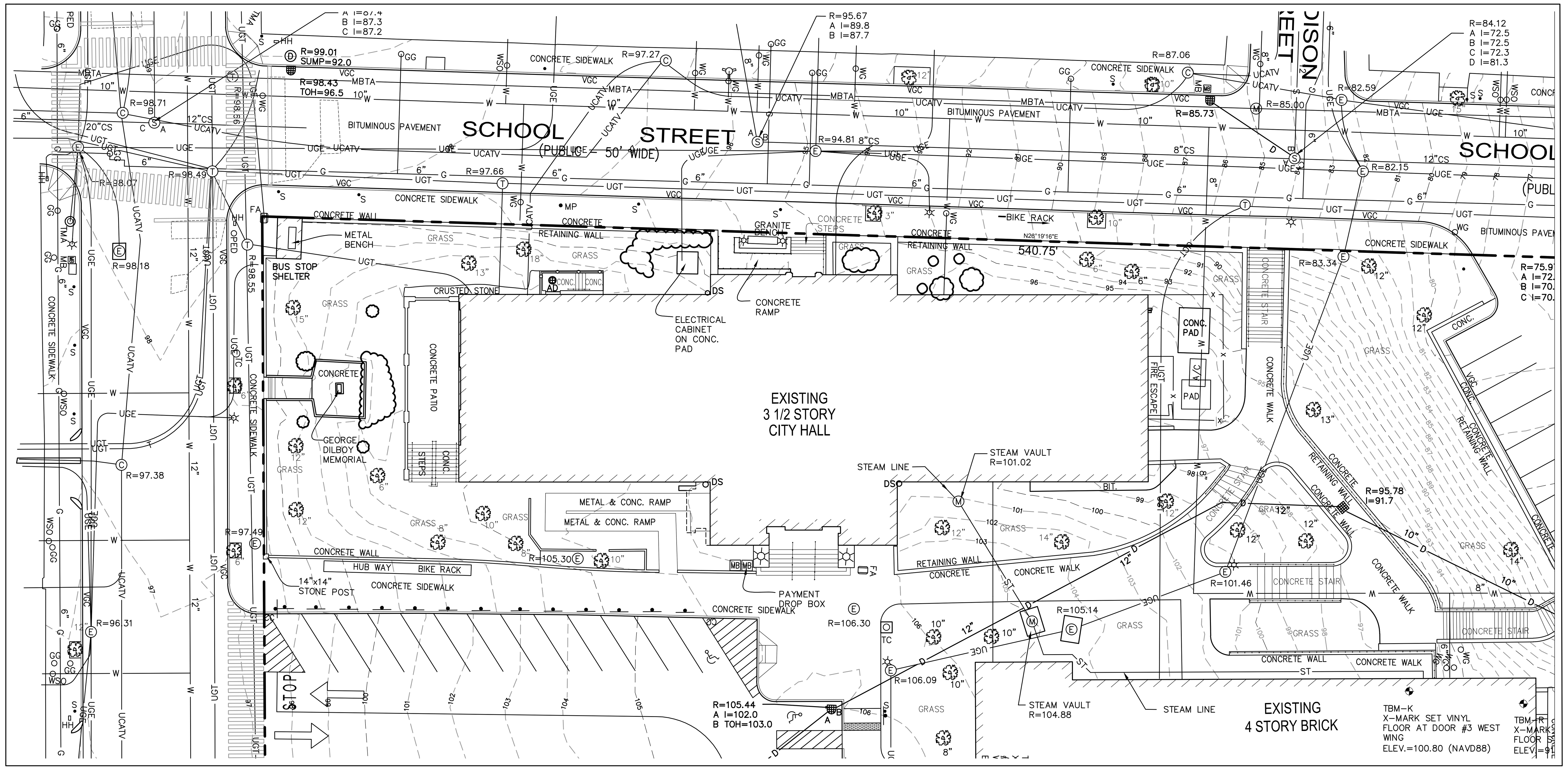
DRAWING INDEX



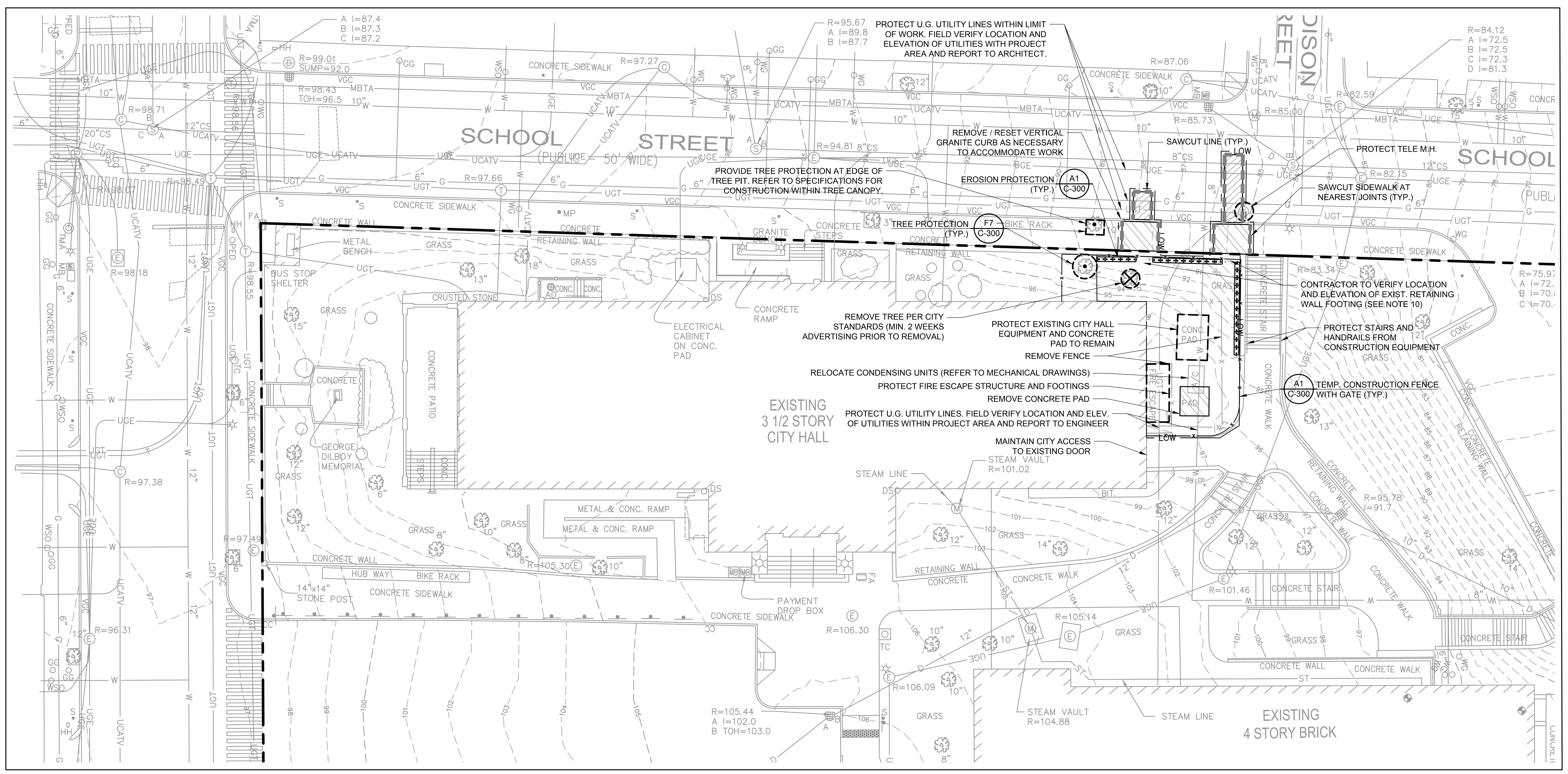
SMMA

Cambridge I Providence

ARCHITECTURE
ENGINEERING
INTERIOR DESIGN
PLANNING



EXISTING CONDITIONS
1"=20'



SITE PREPARATION
1"=20'

EXISTING CONDITIONS NOTES

1. THE EXISTING CONDITIONS SHOWN WAS PREPARED FROM AN ACTUAL ON THE GROUND FIELD SURVEY CONDUCTED BY NITSCH ENGINEERING FROM OCTOBER 7, 2015 THROUGH NOVEMBER 2, 2015.

2. HORIZONTAL COORDINATES REFER TO MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND) NAD83.

3. ELEVATION REFERS TO NORTH AMERICAN VERTICAL DATUM (NAVD88).

4. THE SUB-SURFACE UTILITY INFORMATION SHOWN HEREON IS COMPILED BASED ON FIELD SURVEY INFORMATION, RECORD INFORMATION AS SUPPLIED BY THE APPROPRIATE UTILITY COMPANIES, AND PLAN INFORMATION SUPPLIED BY THE CLIENT, IF ANY; THEREFORE WE CANNOT GUARANTEE THE ACCURACY OF SAID COMPILED SUB-SURFACE INFORMATION TO ANY CERTAIN DEGREE OF STATED TOLERANCE. ONLY PHYSICALLY LOCATED SUB-SURFACE UTILITY FEATURES FALL WITHIN NORMAL STANDARD OF CARE ACCURACIES.

5. THE LOCATIONS OF UNDERGROUND PIPES, CONDUITS, AND STRUCTURES HAVE BEEN DETERMINED FROM SAID INFORMATION, AND ARE APPROXIMATE ONLY. COMPILED LOCATIONS OF ANY UNDERGROUND STRUCTURES, NOT VISIBLY OBSERVED AND LOCATED, CAN VARY FROM THEIR ACTUAL LOCATIONS.

6. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED.

7. THE STATUS OF UTILITIES, WHETHER ACTIVE, ABANDONED, OR REMOVED, IS AN UNKNOWN CONDITION.

EXISTING CONDITIONS LEGEND

Symbol	Description
TBM	BENCHMARK
	CATCH BASIN
	CABLE TELEVISION MANHOLE
	DRAIN MANHOLE
	ELECTRIC MANHOLE
	MISCELLANEOUS MANHOLE
	SEWER MANHOLE
	TELEPHONE MANHOLE
	WATER MANHOLE
GSO	GAS SHUT-OFF
WSO	WATER SHUT-OFF
GG	GAS GATE
WG	WATER GATE
BWW	BOSTON WATER WORKS
	FIRE HYDRANT
DS	DOWN SPOUT
UP	UTILITY POLE
UP W/ UE	UTILITY POLE WITH CONDUIT LINE TO GROUND
	LIGHT POLE
LB	LIGHT BOLLARD
LL	LANDSCAPE LIGHT
HH	HAND HOLE
TC	TRASH CAN
FACB	FIRE ALARM CALL BOX
MP	METAL POST
CP	CONCRETE POST
PM	PARKING METER
S	SIGN POST
12"	DECIDUOUS TREE WITH TRUNK DIAMETER
12"	CONIFEROUS TREE WITH TRUNK DIAMETER
	HANDICAP PARKING
	SPOT ELEVATION
CLF	CHAIN LINK FENCE
BB	BITUMINOUS CONCRETE BERM
SGC	SLOPED GRANITE CURB
VGC	VERTICAL GRANITE CURB
VCC	VERTICAL CONCRETE CURB
WCR	WHEELCHAIR RAMP
LST	LANDSCAPE TIMBER
R=	RIM ELEVATION EQUALS
I=	INVERT ELEVATION EQUALS
TOH=	TOP OF HOOD ELEVATION EQUALS
NPV	NO PIPES VISIBLE
TOW=	TOP OF WATER
BOT=	BOTTOM ELEVATION
TOS=	TOP OF SLUDGE ELEVATION
TOD=	TOP OF DIRT ELEVATION
FOD	FULL OF DIRT
TW	TOP OF WALL ELEVATION
MW	MONITORING WELL
CATV	UNDERGROUND CABLE TELEVISION LINE
D	UNDERGROUND DRAIN LINE
UGE	UNDERGROUND ELECTRIC LINE
G	UNDERGROUND GAS LINE
S	UNDERGROUND SEWER LINE
CS	UNDERGROUND COMBINE SEWER LINE
UGT	UNDERGROUND TELEPHONE LINE
W	UNDERGROUND WATER LINE
OHW	OVERHEAD WIRES
F	FIBER OPTIC CABLE LINE
ST	UNDERGROUND STEAM LINE
x	CHAN LINK FENCE
	WROUGHT IRON FENCE
	METAL HAND RAIL
	MONITORING WELL
91x00	SPOT GRADE
96	CONTOUR

EROSION CONTROL MAINTENANCE NOTES

DURING THE PERIOD OF CONSTRUCTION AND UNTIL LONG TERM VEGETATION IS ESTABLISHED:

1. INSPECT EROSION AND SEDIMENT CONTROL MEASURES AT LEAST ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A 0.25-INCH OR GREATER STORM EVENT.

2. REPLACE OR REPAIR EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO 1/2 THE DESIGN HEIGHT OR CAPACITY OF THE MEASURE.

3. MAINTAIN THE ENTRANCES AND EXITS FROM THE SITE IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT INTO THE PRIVATE OR PUBLIC WAY. SEDIMENT THAT IS TRACKED, SPILLED, OR WASHED INTO THESE WAYS, IS TO BE REMOVED BY THE CONTRACTOR IMMEDIATELY.

UTILITIES AND DEMOLITION NOTES

1. PRIOR TO CONSTRUCTION, VERIFY EXISTING UTILITY LOCATIONS AS SHOWN ON THE DRAWINGS. REPORT DISCREPANCIES TO THE ARCHITECT.

2. CONTACT THE APPROPRIATE UTILITY COMPANY AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES. NOTIFY THE ARCHITECT OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION.

3. PROTECT NEW AND EXISTING UTILITIES DURING CONSTRUCTION. ONLY REMOVE EXISTING UTILITIES THAT ARE SPECIFICALLY DESIGNATED ON THIS PLAN TO BE REMOVED.

4. MAINTAIN FUNCTIONING UTILITIES AND NOTIFY THE OWNER AND ARCHITECT A MINIMUM OF 5 DAYS PRIOR TO ANY UTILITY SERVICE INTERRUPTION. OBTAIN APPROVAL TO PROCEED PRIOR TO INTERRUPTION.

5. IF UNDOCUMENTED UTILITIES ARE ENCOUNTERED DURING CONSTRUCTION, CONTACT THE ARCHITECT FOR DIRECTION, PRIOR TO ALTERING THE UTILITY IN ANY WAY.

6. PROTECT EXISTING SITE FEATURES DURING CONSTRUCTION, EXCEPT FOR THOSE ITEMS OR AREAS SPECIFICALLY DESIGNATED ON THIS PLAN TO BE REMOVED.

7. PROTECT EXISTING TREES AND VEGETATION DURING CONSTRUCTION, EXCEPT FOR THOSE ITEMS OR AREAS SPECIFICALLY DESIGNATED ON THIS PLAN TO BE REMOVED. INSTALL TREE PROTECTION PER DETAIL AT LOCATIONS INDICATED. REPLACE OR PROVIDE COMPENSATION FOR TREES DAMAGED OR DECEASED, THAT WERE DESIGNATED TO BE PROTECTED, AS A RESULT OF CONSTRUCTION ACTIVITIES. ANY PRUNING TO EXISTING TREES NEEDS TO APPROVED BY THE CITY DEPARTMENT OF URBAN FORESTRY. REFER TO THE SPECIFICATIONS FOR ANY CONSTRUCTION WITHIN THE EXISTING TREE CANOPY.

8. REMOVE DEMOLISHED MATERIALS NOT DESIGNATED FOR SALVAGE OR STOCKPILE, OFF THE SITE AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.

9. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE CONSTRUCTION OF THE PROJECT.

10. CONTRACTOR TO EXCAVATE TO TOP OF EXISTING WALL'S FOOTING, OR 30" BELOW SIDEWALK IF NO FOOTING EXISTS, AND CORE HOLE 3" ABOVE TOP OF FOOTING FOR GAS / SEWER LINE. CORE AND FILL HOLE PER GAS COMPANY AND CITY OF SOMERVILLE ENGINEERING REQUIREMENTS.

SITE PREPARATION LEGEND

Symbol	Description
	EROSION PROTECTION
	SAWCUT LINE
	TEMP. CONSTRUCTION FENCE WITH GATE
	REMOVE BITUMINOUS CONCRETE PAVEMENT
	REMOVE CONCRETE
	PROTECT ITEM
	REMOVE ITEM
LOW	LIMIT OF WORK
U.G.	UNDER GROUND
TYP.	TYPICAL
M.H.	MANHOLE

CONSTRUCTION SEQUENCING NOTES

1. INSTALL EROSION PROTECTION AS SHOWN ON DRAWING.

2. COMMENCE EARTHWORK ACTIVITIES. UTILITIES AND INSTALLATION OF SITE STRUCTURES ARE TO FOLLOW. AREAS SUSCEPTIBLE TO EROSION ARE TO BE COVERED WITH A TEMPORARY GRASS SEED MIXTURE UNTIL SUCH TIME AS FINAL VEGETATIVE COVER CAN BE IMPLEMENTED.

3. AT THE COMPLETION OF CONSTRUCTION, AND ONCE VEGETATIVE COVER IS ESTABLISHED. CLEAN SILT AND SEDIMENT OUT FROM THE SUMPS IN THE CATCH BASINS. THE SITE IS TO RECEIVE FINAL INSPECTION, AND EROSION CONTROL MEASURES ARE TO BE REMOVED. WALKWAYS, DRIVES, AND PARKING AREAS ARE TO BE SWEPT AND CLEANED.

GENERAL EROSION CONTROL NOTES

1. INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY SITEWORK OR EARTHWORK OPERATIONS AND MAINTAIN THROUGHOUT CONSTRUCTION. MEASURES ARE TO REMAIN IN PLACE UNTIL SITE WORK IS COMPLETE AND GROUNDCOVER IS ESTABLISHED, AS DETERMINED BY THE ARCHITECT.

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

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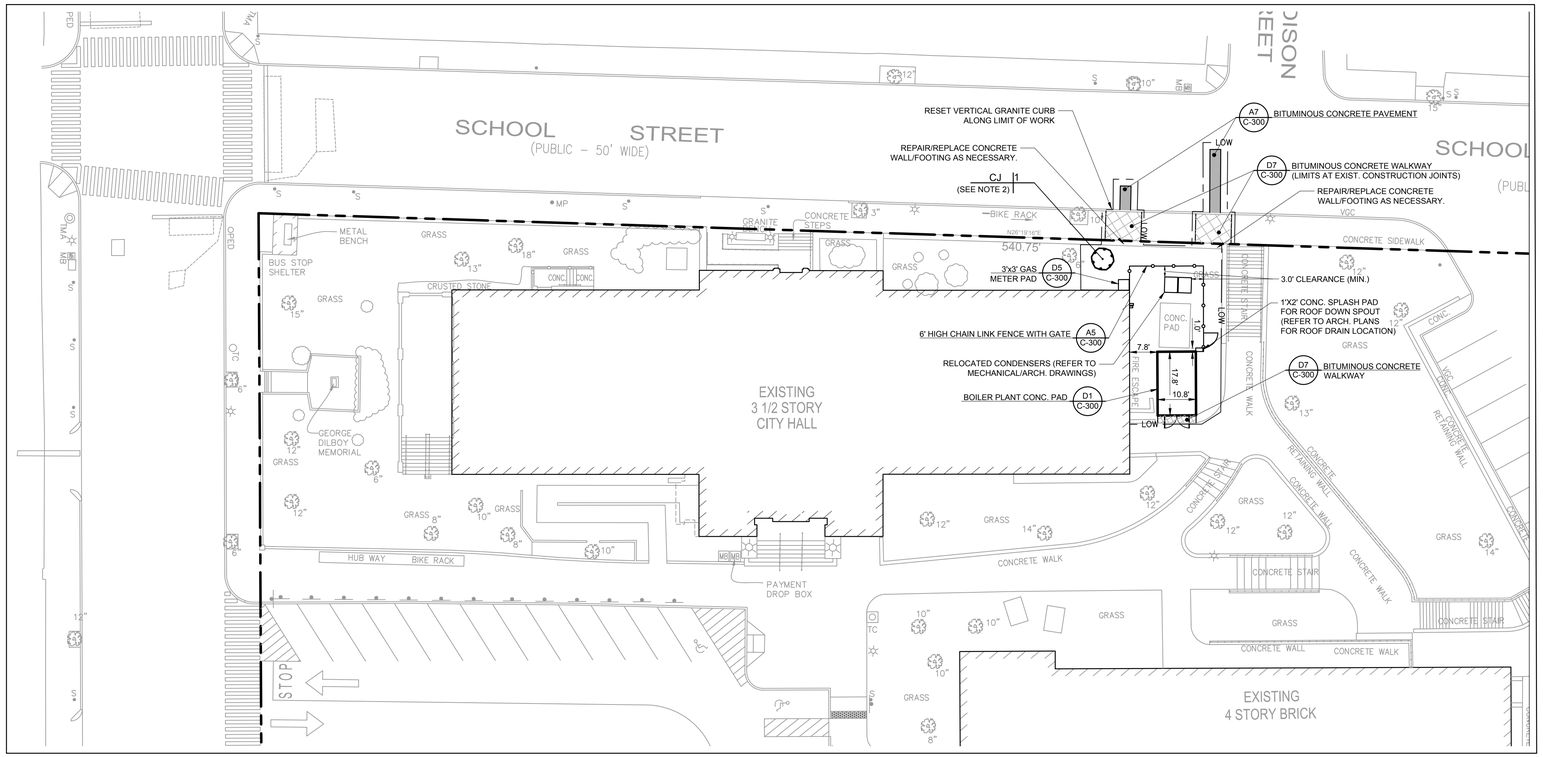
MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG
△ = CLOUDED CHANGE

SCALE	1"=20'
DRAWN BY	PRR
CHECK BY	JCH
PROJ.ARCH./ENGR.	JCH
PROJ. MRG.	LBF
JOB NO.	17117

EXISTING CONDITIONS AND SITE PREPARATION PLAN

C-100



LAYOUT AND MATERIALS
1"=20'

NOTES

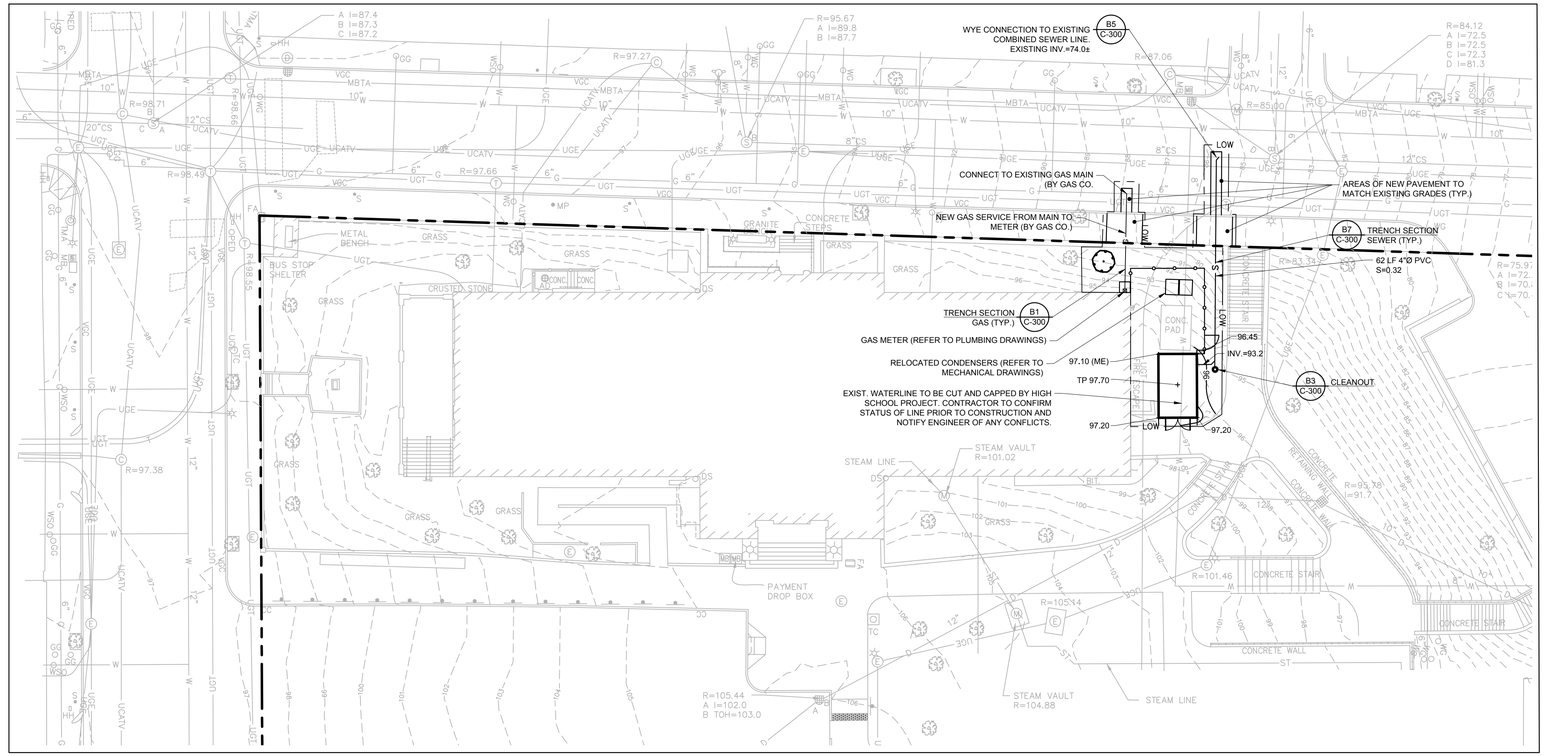
1. LOAM AND SOD ALL DISTURBED LAWN AREAS AS NECESSARY AFTER CONSTRUCTION IS COMPLETE.
2. LOCATION OF NEW TREE SHOWN ON PLAN IS APPROXIMATE. COORDINATE FINAL LOCATION WITH ARCHITECT IN FIELD.

LAYOUT AND MATERIALS LEGEND

- BITUMINOUS CONCRETE PAVEMENT
- BITUMINOUS CONCRETE WALKWAY
- 6' HIGH CHAIN LINK FENCE WITH GATE
- BOILER ENCLOSURE WALL/LIMITS OF CONC. PAD

PLANTING SCHEDULE

TREES					
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	COMMENT
1	CJ	CERCIDIPHYLLUM JAPONICUM	KATSURA TREE	2.5" - 3.0" CAL.	B & B



GRADING, DRAINAGE AND UTILITIES
1"=20'

NOTES

1. FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES IN PROJECT AREA AND NOTIFY ARCHITECT.

2. CONTRACTOR TO EXCAVATE TO TOP OF EXISTING WALL'S FOOTING, OR 36" BELOW SIDEWALK IF NO FOOTING EXISTS, AND CORE HOLE 3" ABOVE TOP OF FOOTING FOR GAS / SEWER LINE. MINIMUM COVER OVER SEWER DRAIN PIPE IS 30". CORE AND FILL HOLE PER GAS COMPANY AND CITY OF SOMERVILLE ENGINEERING REQUIREMENTS.

GRADING & DRAINAGE LEGEND

- + 91.00 — SPOT GRADE
- 1 — 1' CONTOUR
- S — SEWER LINE
- G — GAS LINE
- ⊠ — GAS METER
- TP — TOP OF PAD
- PVC — POLYVINYL CHLORIDE PIPE
- INV. — INVERT ELEVATION
- TYP. — TYPICAL
- ME — MEET EXISTING

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

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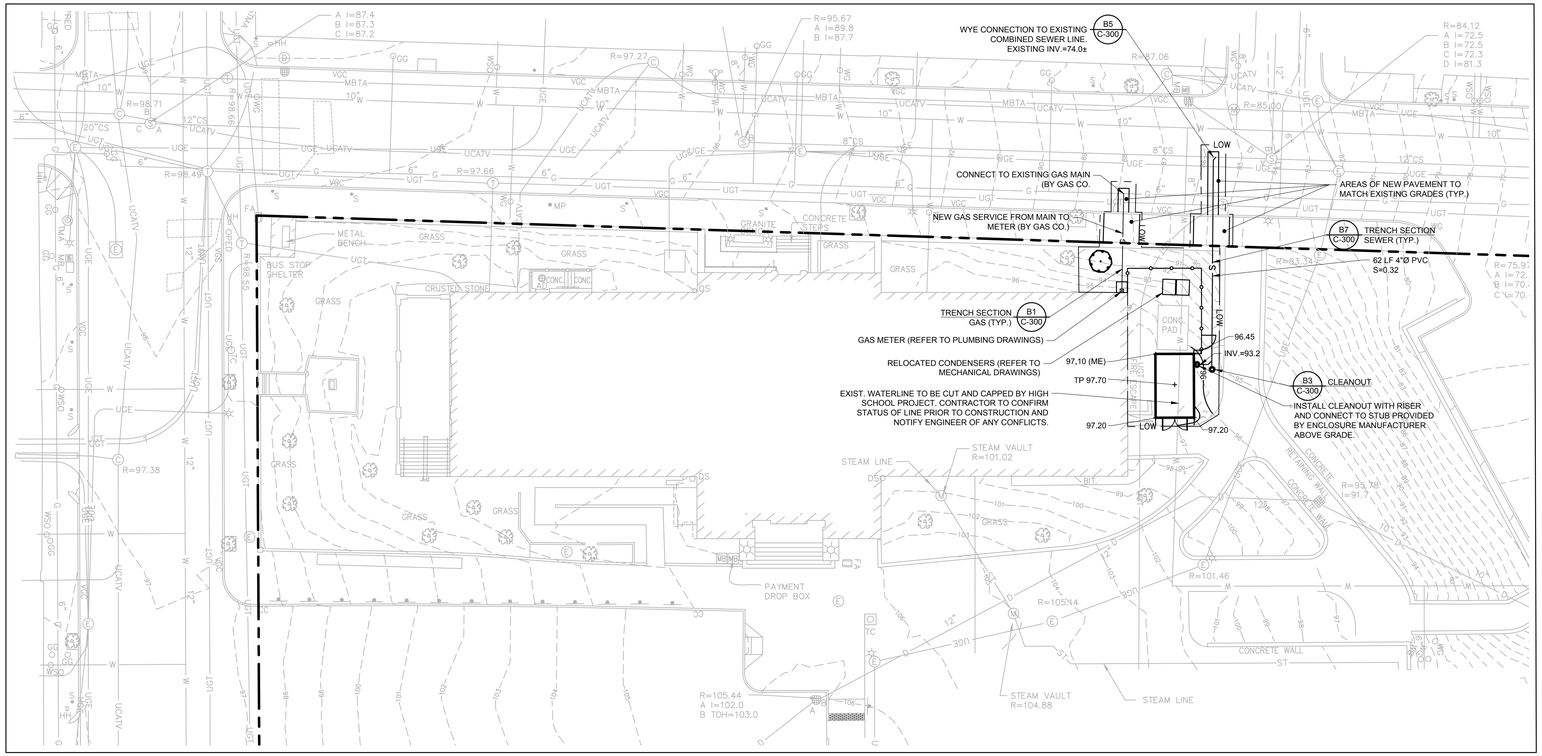
PROJ. MRG.	LBF
JOB NO.	17117

LAYOUT AND MATERIALS, AND GRADING, DRAINAGE AND UTILITIES PLAN

C-200



GRADING, DRAINAGE AND UTILITIES - BID ALTERNATE 1

1"=20'

NOTES

1. FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES IN PROJECT AREA AND NOTIFY ARCHITECT.

2. CONTRACTOR TO EXCAVATE TO TOP OF EXISTING WALL'S FOOTING, OR 30" BELOW SIDEWALK IF NO FOOTING EXISTS, AND CORE HOLE 3" ABOVE TOP OF FOOTING FOR GAS / SEWER LINE. CORE AND FILL HOLE PER GAS COMPANY AND CITY OF SOMERVILLE ENGINEERING REQUIREMENTS.

GRADING & DRAINAGE LEGEND

+ 91.00	. . . . .	SPOT GRADE
——1——	. . . . .	1' CONTOUR
——S——	. . . . .	SEWER LINE
——G——	. . . . .	GAS LINE
⊠	. . . . .	GAS METER
TP	. . . . .	TOP OF PAD
PVC	. . . . .	POLYVINYL CHLORIDE PIPE
C.I.	. . . . .	CAST IRON
INV.	. . . . .	INVERT ELEVATION
TYP.	. . . . .	TYPICAL

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 inch = 20 ft.

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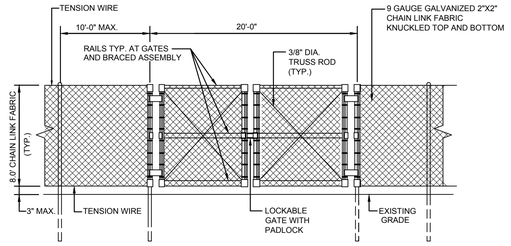
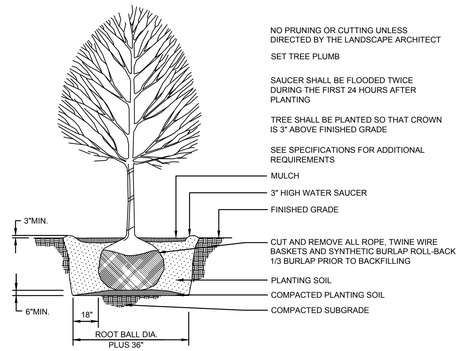
GRADING, DRAINAGE AND UTILITIES PLAN - BID ALTERNATE 1

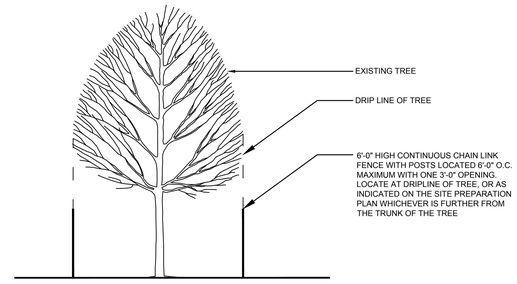
C-200A



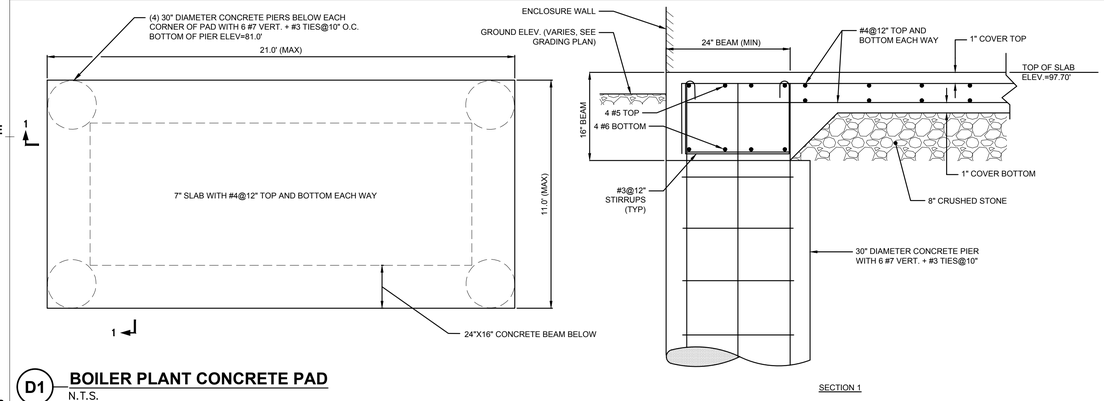
F3 TEMP. CONSTRUCTION FENCE WITH GATE
N.T.S.



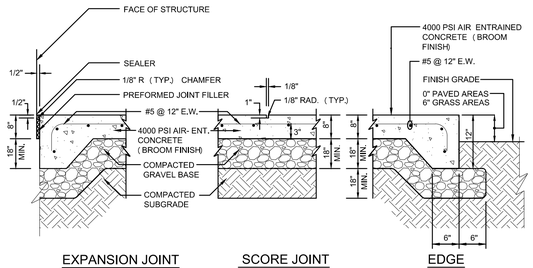
F5 TREE PLANTING DETAIL
N.T.S.



F7 TREE PROTECTION DETAIL
N.T.S.



D1 BOILER PLANT CONCRETE PAD
N.T.S.



D5 GAS METER PAD
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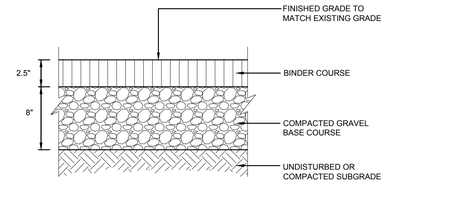
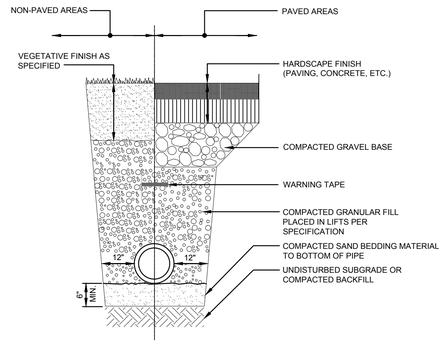
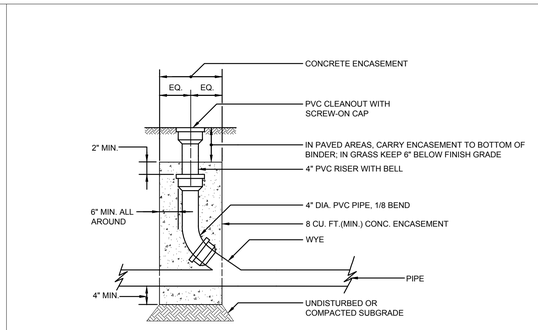


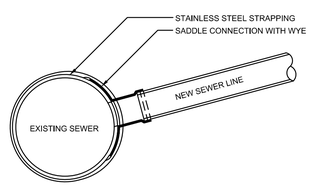
D7 BITUMINOUS CONCRETE WALKWAY
N.T.S.



B1 TRENCH SECTION - GAS
N.T.S.

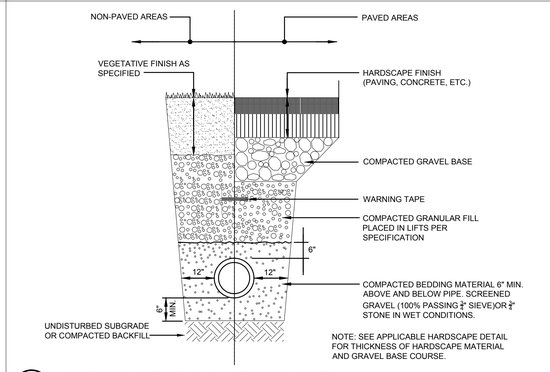


B3 CLEANOUT
N.T.S.

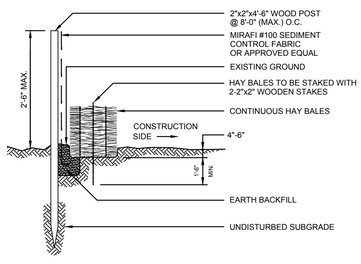


NOTES:
1. FULL PVC OR IRON SADDLE MAY BE USED TO CONNECT TO EXISTING PVC, CLAY, CONCRETE OR IRON PIPE.
2. SADDLES MUST HAVE RUBBER GASKETS AND SHALL BE TIGHTENED WITH STRAPS. SADDLES WILL NOT BE CEMENT ONTO THE PIPE.
3. FULL WYE CONNECTION FITTINGS MAY BE USED.
4. PIPE SHALL BE CUT TO CONFORM TO THE OPENING IN THE SADDLE.
5. CONNECTIONS DIRECTLY INTO THE EXISTING PIPE WITHOUT A SADDLE OR A FULL WYE FITTING ARE NOT ALLOWED.

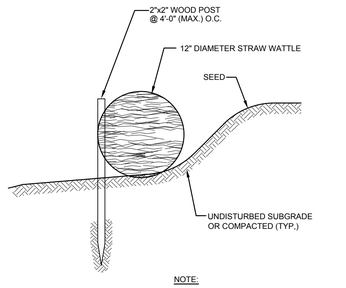
B5 WYE CONNECTION TO SEWER
N.T.S.



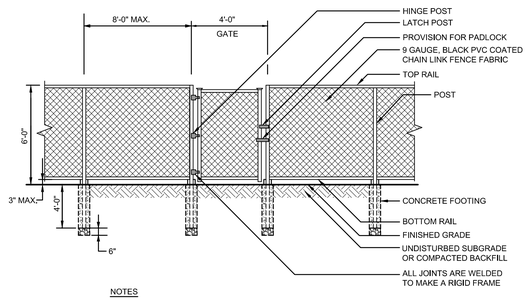
B7 TRENCH SECTION - SEWER PIPE
N.T.S.



A1 EROSION PROTECTION
N.T.S.

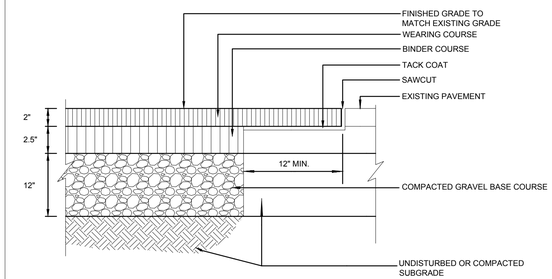


NOTE:
INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS



NOTES
1. CONCRETE FOUNDATIONS SHALL HAVE A DIAMETER EQUAL TO FOUR TIMES THE DIAMETER OF THE POST, BUT NOT LESS THAN 12 INCHES.
2. ALL POST, RAILS, BRACES AND CAPS TO BE PVC COATED (BLACK COLOR TO MATCH FABRIC)

A5 6 FT. HIGH CHAIN LINK FENCE WITH GATE
N.T.S.



A7 BITUMINOUS CONCRETE AT EXISTING PAVEMENT
N.T.S.

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DRAWN BY	PRR
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JOB NO.	17117

SITE DETAILS

C-300

P:\2017\17117\BIM\c\cs\C-300 SITE DETAILS.dwg 1/17/2020 3:49:47 PM

ABBREVIATIONS

A		FE	FIRE EXTINGUISHER	PLAS	PLASTER
A/E	ARCHITECT/ENGINEER	FEC	FIRE EXTINGUISHER CABINET	PLB	PLUMB
AB	ANCHOR BOLT	FF EL	FINISH FLOOR ELEVATION	PLBG	PLUMBING
AC	AIR CONDITION	FF&E	FURNITURE, FIXTURE, AND EQUIPEMENT	PLWD	PLYWOOD
ACC	ACCESSIBLE	FHC	FIRE HOSE CABINET	PNL	PANEL
ACCU	AIR COOLED CONDENSING UNIT	FHP	FULL HEIGHT PARTITION	POL	POLISHED
ACP	ACOUSTIC CEILING PANEL	FIN	FINISH	POLY	POLYETHYLENE, PLASTIC
ACS FLR	ACCESS FLOOR	FIN	FLR FINISH FLOOR	PR	PAIR
ACS PNL	ACCESS PANEL	FIN GR	FINISH GRADE	PREFAB	PREFABRICATED
ACST	ACOUSTIC	FLR	FLOOR	PREFIN	PREFINISHED
ADJ	ADJACENT	FOF	FACE OF FINISH	PREP	PREPERATION
ADJA	ADJUSTABLE	FOS	FACE OF STUD	PRMLD	PREMOLDED
ADMIN	ADMINISTRATION	FP	FIRE PROTECTION	PT	PAINT
AFF	ABOVE FINISHED FLOOR	FRG	FIBER REINFORCED GYPSUM	PTN	PARTITION
AFG	ABOVE FINISHED GRADE	FRMG	FRAMING	PVC	POLYVINYL-CHLORIDE (ROOFING)
AHJ	AUTHORITY HAVING JUSTIDICTION	FRP	FIBERGLASS REINFORCED PLASTIC		
AHU	AIR HANDLING UNIT	FT	FEET, FOOT	Q	
ALT	ALTERNATE	FTG	FOOTING	QTR	QUARTER
ALUM	ALUMINUM	FURN	FURNISH	QTY	QUANITY
ANC	ANCHOR, ANCHORAGE				
ANOD	ANODIZED	G		R	
APPROX	APPROXIMATE	GALV	GALVANIZED	RAD	RADIUS
ARCH	ARCHITECT	GC	GENERAL CONTRACTOR	RCP	REFLECTED CEILING PLAN
AVG	AVERAGE	GEN	GENERAL	RD	ROOF DRAIN
		GF	GROUND FACED	REC	RECESSED
B		GFCI	GROUND FAULT CIRCUT INTERRUPTER	REINF	REINFORCE
B/B	BACK TO BACK	GFRC	GLASS-FIBER-REINFORCED CONCRETE	REM	REMOVABLE
BD	BOARD	GFRG	GLASS-FIBER-REINFORCED GYPSUM	REPL	REPLACE
BEJ	BRICK EXPANSION JOINT	GFRP	GLASS-FIBER-REINFORCED PLASTIC	RES	RESILIENT
BFF	BELOW FINISH FLOOR	GL	GLASS OR GLAZING	REV	REVERSE
BITUM	BITUMINOUS	GMD	GROUP-MOUNTED DEVICES	RFG	ROOFING
BKBD	BACKBOARD	GWB	GYPSUM WALL BOARD	RFI	REQUEST FOR INFORMATION
BKG	BACKING	GYM	GYMNASIUM	RH	ROOF HATCH
BLDG	BUILDING	GYP	GYPSUM	RH	RIGHT HAND
BLKHD	BULKHEAD			RIS	RISER
BLW	BELOW	H		RM	ROOM
BM	BEAM	HAZ	HAZARD	RTD	RATING, RATED
BOS	BOTTOM OF STEEL	HAZMAT	HAZARDOUS MATERIALS	RTU	ROOF TOP UNIT
BOT	BOTTOM	HB	HOSE BIBB	RWL	RAIN WATER LEADER
BRDG	BRIDGING	HC	HOLLOW CORE		
BSMT	BASEMENT	HC	HANDICAP	S	
BU	BUILT-UP	HCWD	HOLLOW CORE WOOD DOOR	SC	SOLID CORE
		HDR	HEADER	SCWD	SOLID CORE WOOD DOOR
C		HDWD	HARDWOOD	SD	STORE DRAIN
C TO C	CENTER TO CENTER	HM	HOLLOW METAL	SECT	SECTION
CAB	CABINET	HO	HOLD OPEN	SF	SQUARE FOOT, SQUARE FEET
CB	CATCH BASIN	HORIZ	HORIZONTAL	SIM	SIMILAR
CB	CORNER BEAD	HT	HEIGHT	SK	SKETCH
CD	CONSTRUCTION DOCUMENTS	HW	HARDWARE	SLDG	SLIDING
CEM	CEMENT			SLNT	SEALANT
CF	CONTRACTOR FURNISHED	I		SPEC	SPECIFICATIONS
CFCI	CONTRACTOR FURNISHED / CONTRACTOR INSTALLED	ID	INSIDE DIAMETER	SQ	SQUARE
CFE	CONTRACTOR FURNISHED EQUIPEMENT	INSUL	INSULATION	SST	STAINLESS STEEL
CFLG	COUNTER FLASHING	INT	INTERIOR	STC	SOUND TRANSMITION CLASS
CFOI	CONTRACTOR FURNISHED / OWNER INSTALLED	INV	INVERT	STD	STANDARD
CG	CORNER GUARD			STN	STONE
CIP	CAST-IN-PLACE	J		STNLS	STAINLESS
CJ	CONTROL JOINT	JAN	JANITOR	STOR	STORAGE
CL	CENTER LINE			STRUCT	STRUCTURAL
CLG	CEILING	L		SUSP	SUSPENDED
CLG HT	CEILING HEIGHT	LAM	LAMINATE	SUSP CLG	SUSPENDED CEILING
CLO	CLOSET	LAV	LAVATORY	SV	SHEET VINYL
CLR	CLEAR	LF	LINEAR FOOT, FEET	SYMM	SYMMETRICAL
CLWG	CLEAR WIRED GLASS	LIN	LINEAR		
CMU	CONCRETE MASONRY UNIT	LINO	LINOLEUM	T	
CO	CABON MONOXIDE	LPT	LOW POINT	T	TREAD
CO2	CARBON DIOXIDE			TEL	TELEPHONE
COL	COLUMN	M		TEMP	TEMPORARY
CONC	CONCRETE	M MR	MOISTURE RESISTANT	THK	THICKNESS
CONTR	CONTRACTOR	MATL	MATERIAL	THRES	THRESHOLD
COORD	COORDINATE	MAX	MAXIMUM	TMPD	TEMPERED
CPT	CARPET	MDF	MEDIUM DENSITY FIBERBOARD	TMPD GL	TEMPERED GLASS
CS	CAST STONE	MDO	MEDIUM DENSITY OVERLAY	TNM	TIME AND MATERIALS
CSWK	CASEWORK	MECH	MECHANICAL	TO	TOP OF
CT STN	CUT STONE	MEMB	MEMBRANE	TPO	THERMOPLASTIC POLYOLEFIN
CTR	CENTER	MEZZ	MEZZANINE	TRTD	TREATED
CTRL	CONTROL	MFR	MANUFACTURER	TYP	TYPICAL
CU FT	CUBIC FEET	MISC	MISCELLANOUS	XFMR	TRANSFORMER
		MO	MASONRY OPENING		
D		MTD	MOUNTED	U	
DBL	DOUBLE	MTG	MOUNTING	UCD	UNDERCUT DOOR
DEFS	DIRECT APPLIED EXTERIOR FINISH SYSTEMS	MTL	METAL	UNEX	UNEXCAVATED
DEG	DEGREE	MULL	MULLION	UNFIN	UNFINISHED
DEMO	DEMOLITION	MWP	MEMBRANE WATERPROOFING	UON	UNLESS OTHERWISE NOTED
DF	DRINKING FOUNTAIN			UR	URINAL
DIA	DIAMETER	N			
DIAG	DIAGONAL	NIC	NOT IN CONTRACT	V	
DIM	DIMENSION	NOM	NOMINAL	VAN	VANITY
DR	DOOR	NTS	NOT TO SCALE	VAR	VARIED
DW	DISHWASHER			VB	VAPOR BARRIER
DWG	DRAWING	O		VCT	VINYL COMPOSITION TILE
		OA	OVERALL	VERT	VERTICAL
E		OC	ON CENTER	VEST	VESTIBULE
EA	EACH	OD	OUTSIDE DIAMETER	VIF	VERIFY IN FIELD
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	OF/CI	OWNER FURNISHED / CONTRACTOR INSTALLED	VNR	VENEER
EJ	EXPANSION JOINT	OF/OI	OWNER FURNISHED / OWNER INSTALLED	VR	VAPOR RETARDER
EL	ELEVATION	OH DR	OVERHEAD (COILING) DOOR	VTR	VENT THROUGH ROOF
ELEV	ELEVATIONS	OPNG	OPENING	VWC	VINYL WALL COVERING
ELVR	ELEVATOR	OPP	OPPOSITE		
EMER	EMERGENCY	OPPH	OPPOSITE HAND	W	
ENCL	ENCLOSURE	OPQ	OPAQUE	W	WITH
EOS	EDGE OF SLAB	OPR	OPERABLE	W/O	WITHOUT
EPDM	ETHYLENE PROPYLENE DIENE MONOMER			WC	WATER CLOSET
EPS	EXPANDED POLYSTYRENE BOARD (INSULATION)	P		WCN	WATER CURTAIN
EQ	EQUAL	LB	POUND	WD	WOOD
EQUIP	EQUIPMENT	PAR	PARALLEL	WH	WALL HUNG
EXIST	EXISTING	PART	PARTIAL	WO	WHERE OCCURS
EXP	EXPANSION	PBD	PARTICLEBOARD	WP	WORKING POINT
EXT	EXTERIOR	PCC	PRECAST CONCRETE	WPG	WATERPROOFING
		PEJ	PREMOLDED EXPANSION JOINT	WPM	WATERPROOF MEMBRANE
F		PERF	PERFORATED	WPR	WEATHERPROOF
F/F	FACE TO FACE	PERIM	PERIMETER	WR	WEATHER RESISTANT
FDN	FOUNDATION	PERP	PERPENDICULAR	WWR	WELDED WIRE REINFORCING
		PLAM	PLASTIC LAMINATE		

GENERAL SYMBOLS LEGEND

- REFERENCE GRID
- WORKPOINT, CONTROL POINT OR DATUM
- CENTERLINE
- N.I.C
- DRAWING LOCATION
- SHEET WHERE LOCATED
- ENLARGED AREA CALLOUT
- DRAWING LOCATION
- EXTERIOR ELEVATION
- SHEET LOCATION
- INTERIOR ELEVATION - MULTIPLE
- BUILDING CROSS SECTION
- WALL SECTION
- DETAIL
- PLAN NORTH
- TRUE NORTH
- NORTH REFERENCE
- Sheet Notes
- PARTITION TYPE
- ALIGN
- WINDOW TAG - EXTERIOR
- WINDOW TAG - INTERIOR
- SIGNAGE
- NAME
- NUMBER
- AREA
- REVISION NUMBER - SHEET SPECIFIC
- AREA OF REVISION
- REVISION INDICATOR
- LIMIT OF WORK LINE

REFLECTED CEILING LEGEND

- EXISTING 2'X2' ACOUSTICAL CEILING
- NO CEILING - EXPOSED TO STRUCTURE (SEE FINISH SCHEDULE FOR EXPOSED ITEMS TO BE PAINTED)
- CEILING HEIGHT (A.F.F.)

NOTE: GENERIC DEVICE SYMBOLS SHOWN BELOW- SEE SPECIFIC DISCIPLINES (MECH., ELEC., ETC.) FOR SPECIFIC DESCRIPTIONS AND ADDITIONAL ITEMS NOT SHOWN.

- RECESSED LIGHT FIXTURES
- EXIT SIGN
- SMOKE DETECTOR
- FIRE ALARM HEAT DETECTOR, COMBO RATE
- FIRE ALARM HEAT DETECTOR, FIXED TEMP
- FIRE ALARM STROBE ONLY
- FIRE ALARM AUDIO/STROBE
- SUPPLY AIR DIFFUSER
- RETURN AIR GRILLE
- EXISITNG RETURN AIR DIFFUSER
- EXISTING RETURN AIR GRILL
- EXISTING SPRINKLER

DEMOLITION SYMBOLS LEGEND

- REMOVE ALL CONSTRUCTION SHOWN DASHED COMPLETE, U.O.N.
- EXISTING WALL OR PARTITION TO REMAIN, TYP U.O.N.
- REMOVE PORTION OF EXISTING WALL SEE FLOORPLAN FOR LOCATION AND DIMENSION. TYP U.O.N.
- REMOVE EXISTING DOOR & FRAME COMPLETELY.
- EXISTING DOOR TO REMAIN, TYP U.O.N.

CONSTRUCTION SYMBOLS LEGEND

- EXISTING WALL
- PARTITION TYPE
- NEW WALL
- EXISTING DOOR TO REMAIN
- NEW DOOR (SEE DOOR SCHEDULE)
- DOOR NUMBER
- ROOM TAG
- AREA
- WALL MOUNTED FIRE EXTINGUISHER

MATERIAL LEGEND

- ACOUSTICAL CEILING PANELS
- ALUMINUM
- BATT INSULATION
- BRICK
- CONCRETE
- CONCRETE MASONRY UNIT
- STEEL
- FINISHED WOOD
- GYPSUM BOARD
- PLYWOOD
- RIDGID INSULATION
- WOOD BLOCKING

MASTER KEYNOTE LEGEND	
05 12 00.A	STRUCTURAL STEEL
07 84 13.A	PENETRATION FIRESTOPPING
09 22 16.A	METAL STUD
09 29 00.K5	GYPSUM BOARD TRIM, CORNERBEAD
09 29 00.O	GYPSUM BOARD - TYPE X
09 51 13.A	ACOUSTICAL PANEL CEILING
09 51 13.B	EDGE TRIM
13 34 19.A	INSULATED METAL ROOF PANEL(S)
13 34 19.B	INSULATED METAL WALL PANEL(S)
13 34 19.C	THERMAL INSULATION
13 34 19.F	ROOF GUTTER

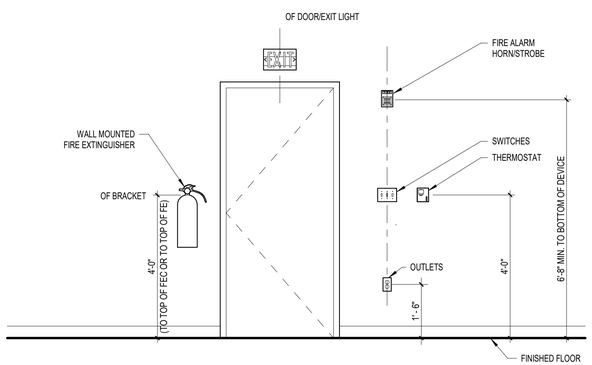
MASTER KEYNOTE LEGEND	
13 34 19.G	DOWNSPOUT
13 34 19.H	STRUCTURAL STEEL FRAMING - 1 HR RATED
13 34 19.J	SEALANT AND BACKER
13 34 19.K	TRIM
13 34 19.M	FLASHING
13 34 19.N	LOUVER
26 00 00.D	ELECTRICAL PANEL
26 00 00.E	LIGHT FIXTURE

MOUNTING HEIGHTS GENERAL NOTES

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE, U.O.N. EXCLUDING EXIT SIGNS.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED, U.O.N.

TYPICAL MOUNTING HEIGHTS

SCALE 1/2" = 1'-0"



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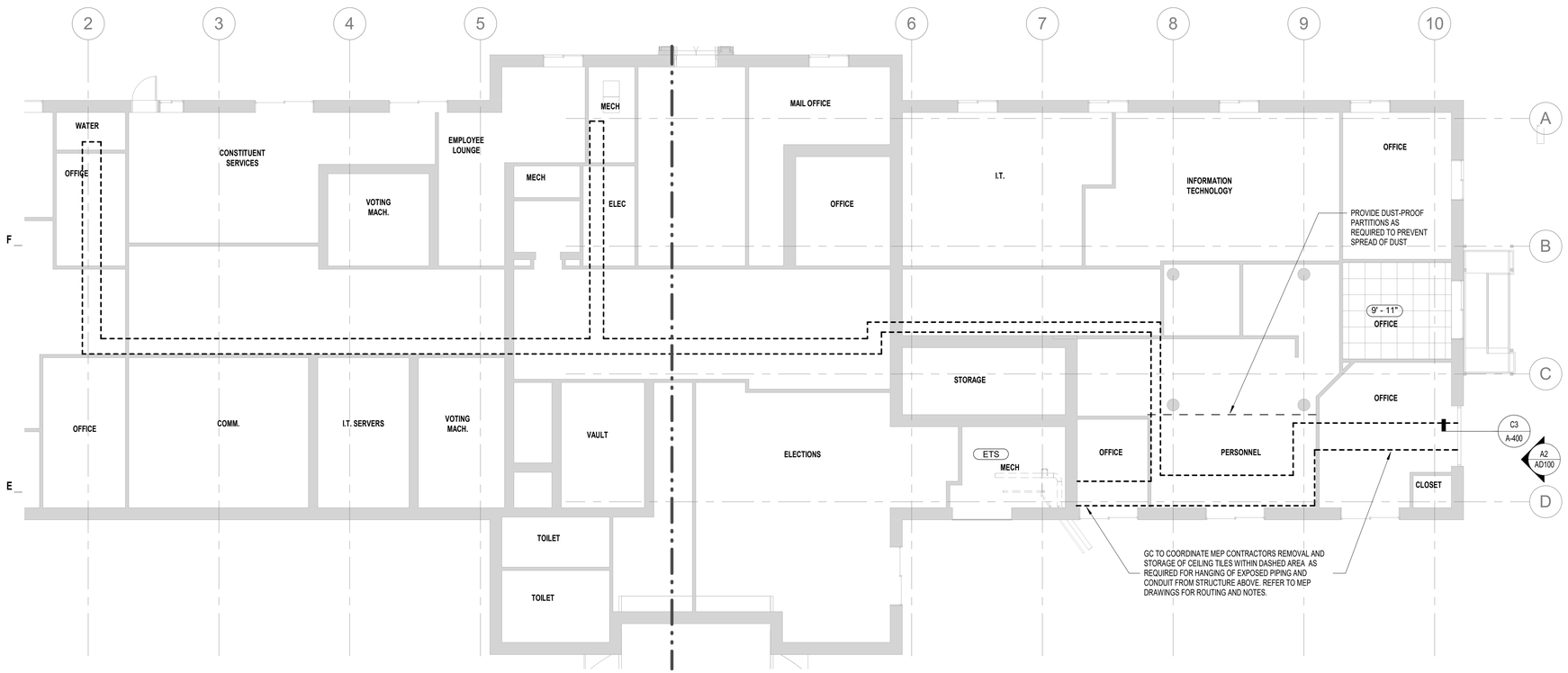
PROJ. MRG.	LBF
JOB NO.	17117

LEGENDS, NOTES, ABBREVIATIONS

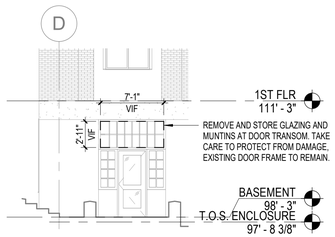
A-001



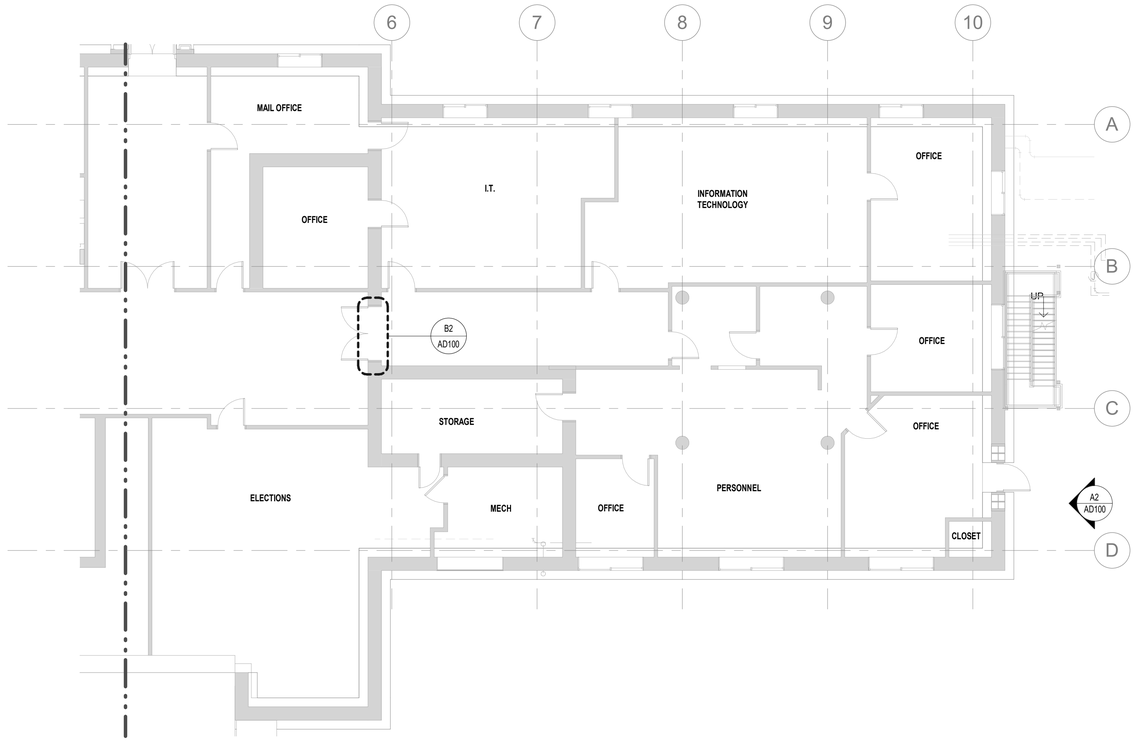
D1 BASEMENT DEMOLITION REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

REMOVE AND STORE GLAZING AND MUNTINS AT HALLWAY DOOR TRANSOM. TAKE CARE TO PROTECT FROM DAMAGE, EXISTING DOOR FRAME TO REMAIN.

B2 HALLWAY DOOR PHOTO



A2 EXTERIOR DEMO ELEVATION
SCALE: 1/8" = 1'-0"



A3 BASEMENT- DEMO
SCALE: 1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. THE CONTRACTOR SCOPE INCLUDES THE FOLLOWING:
   a. REMOVAL OF ALL ITEMS OF ANY NATURE SHOWN WITHIN SCOPE OF WORK.
   b. BEFORE COMMENCING THE WORK, VERIFICATION AT THE SITE OF EXISTING CONSTRUCTION TO BE PRESERVED AND REPORTING TO THE ARCHITECT OF ANY DISCREPANCIES OR QUESTIONABLE ITEMS.
2. COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL CODES AND REGULATIONS PERTAINING TO SAFETY OF PERSONS, PROPERTY AND ENVIRONMENTAL PROTECTION.
3. PROVIDE AND MAINTAIN BARRICADES, LIGHTING AND GUARDRAILS AS REQUIRED BY APPLICABLE CODES AND REGULATIONS TO PROTECT OCCUPANTS OF BUILDING AND WORKERS.
4. ERECT AND MAINTAIN DUST-PROOF PARTITIONS AS REQUIRED TO PREVENT SPREAD OF DUST, FUMES AND SMOKE, ETC. TO OTHER PARTS OF THE BUILDING. ON COMPLETION, REMOVE PARTITIONS AND REPAIR DAMAGED SURFACES TO MATCH ADJACENT SURFACES.
5. PRIOR TO DEMOLITION, MEET WITH OWNER AND ARCHITECT TO IDENTIFY ITEMS WHICH ARE TO BE SALVAGED. ALL OTHER DEMOLISHED MATERIALS ARE TO BE REMOVED FROM THE SITE AND DISPOSE OF THEM LEGALLY BY THE CONTRACTOR.
6. EXISTING SERVICES AND SYSTEMS: MAINTAIN SERVICES AND SYSTEMS INDICATED TO REMAIN AND PROTECT THEM AGAINST DAMAGE DURING SELECTIVE DEMOLITION OPERATIONS. WHERE MECHANICAL OR ELECTRICAL SYSTEMS ARE INDICATED TO BE SELECTIVELY DEMOLISHED, LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP OFF INDICATED UTILITY SERVICES IN CONCEALED LOCATION.
7. REMOVE AND SALVAGE DEBRIS FROM THE SITE DAILY AS IT ACCUMULATES. REMOVE RENOVATION MATERIALS FROM THE SITE, LEAVING A CLEAN, VACUUMED SPACE.
8. PROTECT EXISTING CONSTRUCTION TO REMAIN. REPAIR ANY DAMAGE TO EXISTING CONSTRUCTION IN A MANNER ACCEPTABLE TO THE OWNER OR REPLACE SUCH DAMAGE WITH NEW ACCEPTABLE TO OWNER AND AT NO COST TO OWNER.
9. REFER TO ENGINEERED PLANS FOR FURTHER DEMOLITION OF MECHANICAL, ELECTRICAL, FIRE PROTECTION AND PLUMBING ITEMS.
10. UTILIZE BRACING AND SHORING WHERE NECESSARY TO PREVENT COLLAPSE OF STRUCTURE OR PARTS THEREOF. GENERAL CONTRACTOR IS RESPONSIBLE FOR DESIGN AND CONSTRUCTION OF ALL BRACING AND SHORING.

REFLECTED CEILING DEMOLITION PLAN GENERAL NOTES

1. ALL INFORMATION FROM GENERAL DEMOLITION NOTES APPLIES TO RCP DEMOLITION, UNLESS OTHERWISE NOTED.
2. ALL ACOUSTICAL CEILING TILE AND GRIDS SHOWN TO BE REMOVED FOR REUSE ARE TO BE REMOVED CAREFULLY, STORED AND PROTECTED FOR REINSTALLATION
3. ALL EXISTING FIXTURES THAT ARE TO BE REMOVED FOR REUSE ARE TO BE SALVAGED, STORED AND PROTECTED FOR RELOCATION
4. VERIFY LOCATIONS/DIMENSIONS OF GRID TO BE DEMOLISHED, REFERENCE CONSTRUCTION PLAN FOR COORDINATION.

DEMOLITION SYMBOLS LEGEND

- REMOVE ALL CONSTRUCTION SHOWN DASHED COMPLETE, U.O.N.
- EXISTING WALL OR PARTITION TO REMAIN, TYP U.O.N.
- REMOVE PORTION OF EXISTING WALL. SEE FLOORPLAN FOR LOCATION AND DIMENSION. TYP U.O.N.
- REMOVE EXISTING DOOR & FRAME COMPLETELY.
- EXISTING DOOR TO REMAIN, TYP U.O.N.

KEY PLAN

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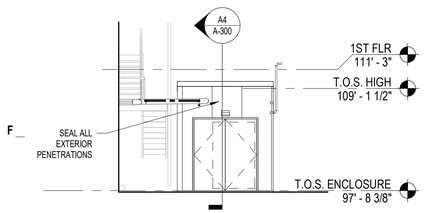
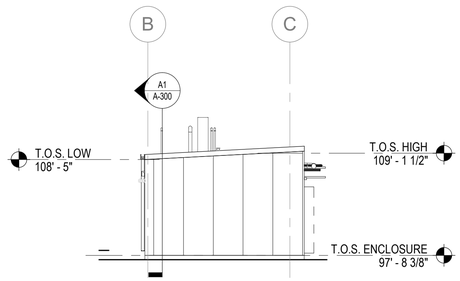
BASEMENT DEMOLITION PLAN AND RCP

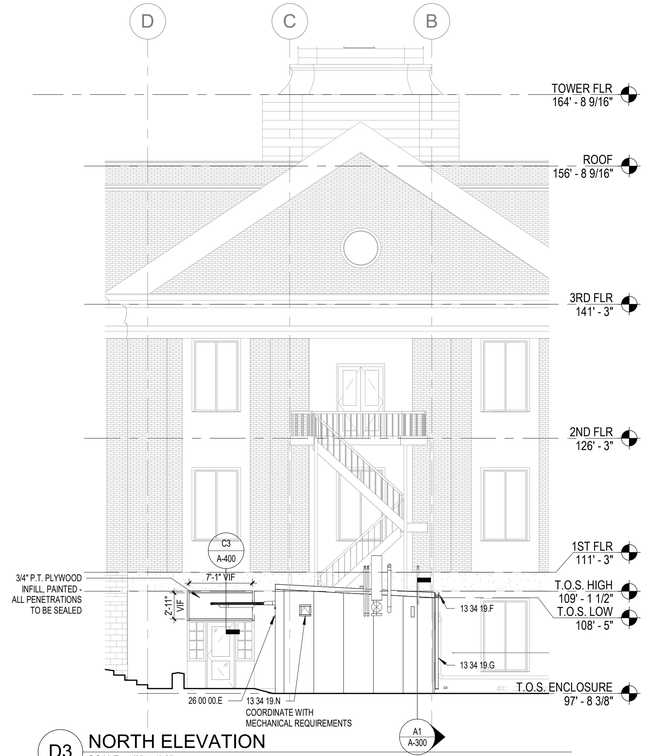
AD100



E1 EAST ELEVATION
SCALE: 1/8" = 1'-0"

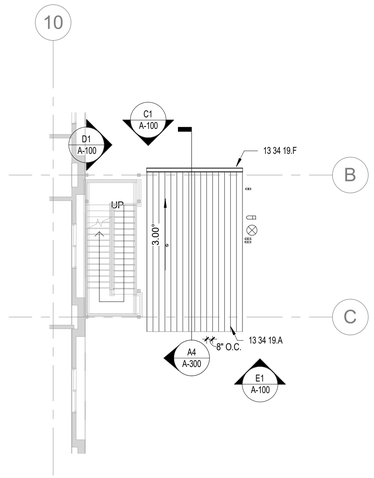


D1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



D3 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

KEYNOTE LEGEND	
13 34 19.A	INSULATED METAL ROOF PANEL(S)
13 34 19.F	ROOF GUTTER
13 34 19.G	DOWNSPOUT
13 34 19.N	LOUVER
26 00 00.E	LIGHT FIXTURE



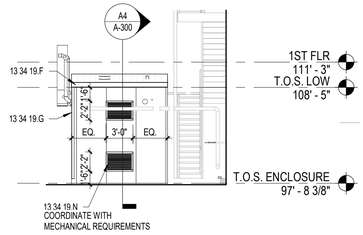
D5 ROOF PLAN - NEW CONSTRUCTION
SCALE: 1/8" = 1'-0"

CONSTRUCTION PLAN GENERAL NOTES

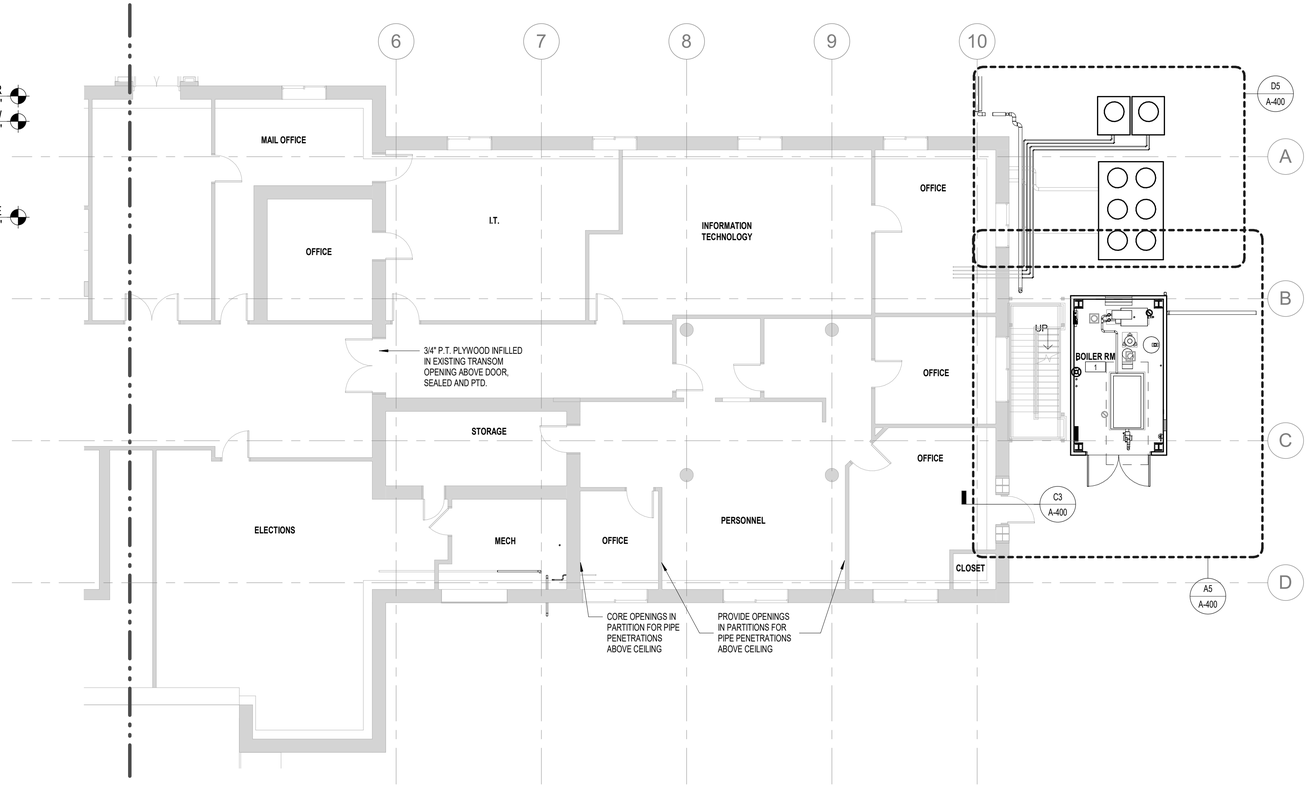
1. ALL WORK SHALL COMPLY WITH FEDERAL, STATE, AND LOCAL BUILDING CODES AND REGULATIONS.
2. OBTAIN AND PAY FOR PERMITS AND INSPECTIONS REQUIRED BY PUBLIC AUTHORITIES GOVERNING THE WORK.
3. ANY CONFLICTS BETWEEN SITE CONDITIONS AND DRAWINGS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/DESIGNER.
4. THE CONTRACT DOCUMENTS ARE COMPLIMENTARY TO EACH OTHER. WHAT IS REQUIRED FOR ONE DRAWING SHALL BE AS BINDING AS IF REQUIRED FOR ALL.
5. ALL EXISTING PARTITIONS TO BE PATCHED AND REPAIRED AS NEEDED TO MAINTAIN ORIGINAL ACOUSTICAL AND RATED FIRE/SMOKE DESIGN INTENT. ALL PENETRATIONS ARE TO BE SEALED TO MAINTAIN FIRE/SMOKE RATING AND ACOUSTICAL RATING.
6. PENETRATIONS IN GYPSUM BOARD CONSTRUCTION ABOVE FINISHED CEILING SHALL BE EFFECTIVELY SEALED TO PREVENT SOUND LEAKAGE.
7. PRIOR TO CLOSING ANY WALLS OR CEILINGS, ALL SYSTEMS (HVAC, PLUMBING, ELECTRICAL) SHALL BE INSPECTED BY CONTRACTOR AND AUTHORITIES HAVING JURISDICTION TO ENSURE THEIR PROPER INSTALLATION AND FUNCTION.
8. PROTECT AREA OF WORK AND ADJACENT AREAS FROM DAMAGE DURING CONSTRUCTION.
9. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN. IN CASE OF CONFLICT, CONSULT THE ARCHITECT.

CONSTRUCTION SYMBOLS LEGEND

- EXISTING WALL
- G3A — PARTITION TYPE
- NEW WALL
- EXISTING DOOR TO REMAIN
- 100 — NEW DOOR (SEE DOOR SCHEDULE)
- DOOR NUMBER
- ROOM NAME / 181 / 100 SF — ROOM TAG / AREA
- WALL MOUNTED FIRE EXTINGUISHER



C1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



A2 BASEMENT - NEW CONSTRUCTION
SCALE: 1/8" = 1'-0"

BID ALTERNATE 1 GENERAL NOTE

ALL WORK ASSOCIATED WITH SECTION 13 34 19 METAL BUILDING SYSTEMS IS TO BE OMITTED AS PART OF BID ALTERNATE 1. FOR BID ALTERNATE 1, THE ENCLOSURE AROUND THE BOILER PLANT IS TO BE PROVIDED BY THE BOILER MANUFACTURER AS A PREFABRICATED UNIT. REGARDLESS OF WHETHER BID ALTERNATE 1 IS ACCEPTED, INTERIOR GYPSUM BOARD TO ACHIEVE A 1 HOUR FIRE RATING IS TO BE PROVIDED AS SHOWN IN THE DRAWINGS, INSTALLED AFTER EITHER THE METAL BUILDING OR THE PREFABRICATED BOILER ENCLOSURE IS CONSTRUCTED.

KEY PLAN

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PROJ. MRG.	LBF
JOB NO.	17117

BOILER ENCLOSURE PLANS AND ELEVATIONS

NORTH

A-100

REFLECTED CEILING PLAN GENERAL NOTES

1. THE CONTRACT DOCUMENTS ARE COMPLIMENTARY TO EACH OTHER. WHAT IS REQUIRED FOR ONE DRAWING SHALL BE AS BINDING AS IF REQUIRED FOR ALL.

2. THIS PLAN IS FOR CEILING FIXTURE AND EQUIPMENT LOCATIONS ONLY. REFER TO MEP/FP DRAWINGS FOR ADDITIONAL INFORMATION.

3. ALL MEP/FP LOCATIONS IN CONFLICT WITH ARCHITECTURAL DRAWINGS SHOULD BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION. NOTIFY ARCHITECT OF ANY DISCREPANCY, OMISSION, OR UNANTICIPATED FIELD CONDITION THAT ALTERS THE INTENT OF THESE DRAWINGS.

REFLECTED CEILING LEGEND

EXISTING 2'X2' ACOUSTICAL CEILING

ETS — NO CEILING - EXPOSED TO STRUCTURE (SEE FINISH SCHEDULE FOR EXPOSED ITEMS TO BE PAINTED)

X'-X" — CEILING HEIGHT (A.F.F.)

NOTE: GENERIC DEVICE SYMBOLS SHOWN BELOW- SEE SPECIFIC DISCIPLINES (MECH., ELEC., ETC.) FOR SPECIFIC DESCRIPTIONS AND ADDITIONAL ITEMS NOT SHOWN.

RECESSED LIGHT FIXTURES

EXIT SIGN

S — SMOKE DETECTOR

135° (R) — FIRE ALARM HEAT DETECTOR, COMBO RATE

135° (F) — FIRE ALARM HEAT DETECTOR, FIXED TEMP

F — FIRE ALARM STROBE ONLY

(F) — FIRE ALARM AUDIO/STROBE

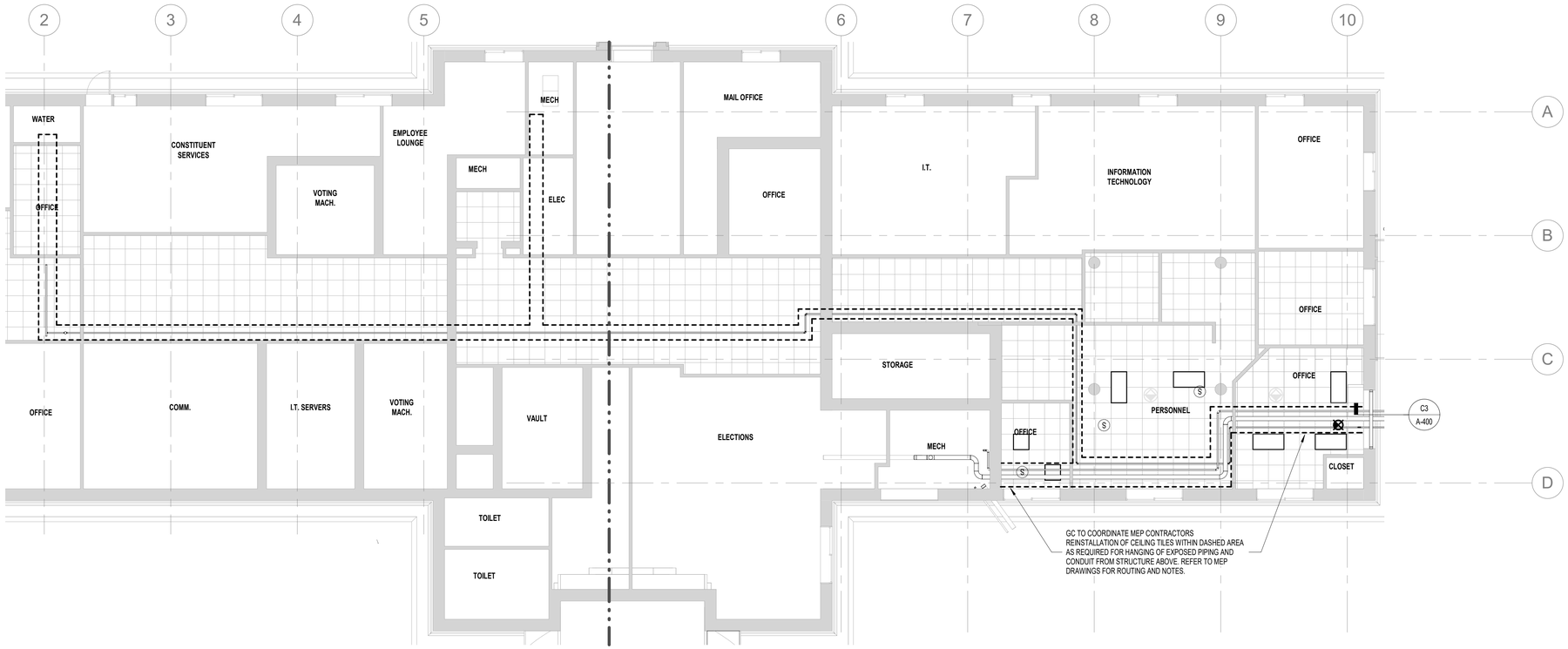
SUPPLY AIR DIFFUSER

RETURN AIR GRILLE

EXISITNG RETURN AIR DIFFUSER

EXISTING RETURN AIR GRILL

EXISTING SPRINKLER



A1 BASEMENT REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

KEY PLAN

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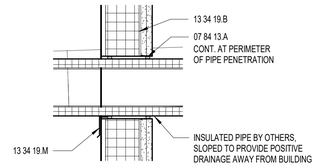
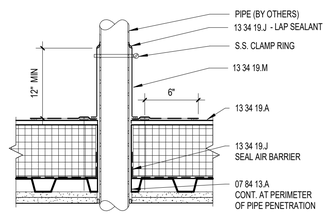
DRAWN BY	CRL
CHECK BY	MDR
PROJ.ARCH./ENGR.	CRL
PROJ. MRG.	LBF
JOB NO.	17117

BASEMENT REFLECTED CEILING PLAN AND DETAILS

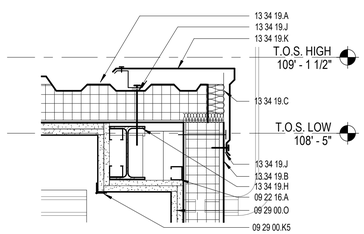
AR100

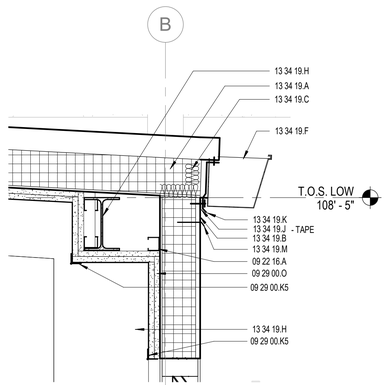


F2 TYPICAL WALL PENETRATION
SCALE: 1 1/2" = 1'-0"

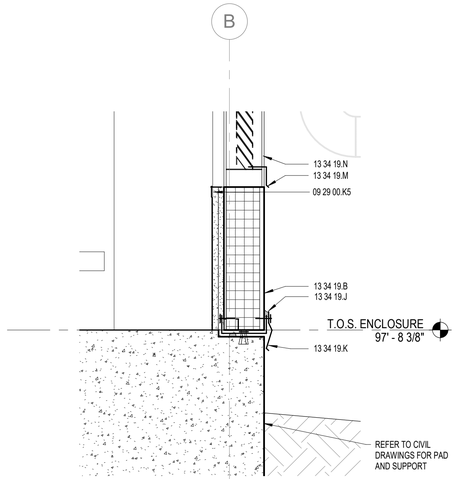


E2 TYPICAL ROOF PENETRATION
SCALE: 1 1/2" = 1'-0"





E3 ROOF EDGE AT GUTTER
SCALE: 1 1/2" = 1'-0"



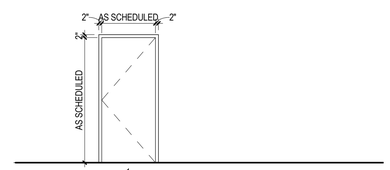
E5 WALL PANEL AT SLAB
SCALE: 1 1/2" = 1'-0"

KEYNOTE LEGEND	
07 84 13.A	PENETRATION FIRESTOPPING
09 22 16.A	METAL STUD
09 29 00.K5	GYPSUM BOARD TRIM, CORNERBEAD
09 29 00.O	GYPSUM BOARD - TYPE X
13 34 19.A	INSULATED METAL ROOF PANEL(S)
13 34 19.B	INSULATED METAL WALL PANEL(S)
13 34 19.C	THERMAL INSULATION
13 34 19.F	ROOF GUTTER
13 34 19.H	STRUCTURAL STEEL FRAMING - 1 HR RATED
13 34 19.J	SEALANT AND BACKER
13 34 19.K	TRIM
13 34 19.M	FLASHING
13 34 19.N	LOUVER

DOOR ABBREVIATIONS

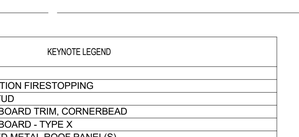
HM	HOLLOW METAL
F	FLUSH

HOLLOW METAL DOOR FRAME TYPES

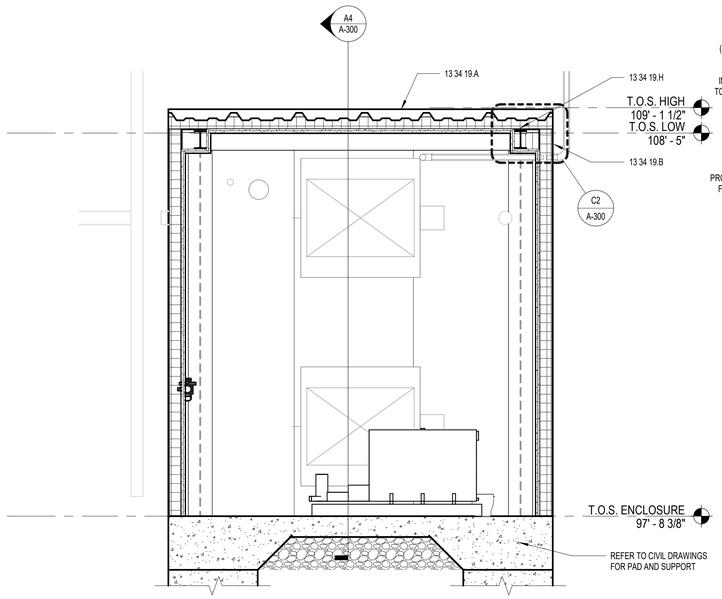


DOOR SCHEDULE										
			DOORS				FRAME			
Mark	TO	FROM	WIDTH	HEIGHT	TYPE	MAT'L	TYPE	MAT'L	RATING	REMARKS
T.O.S. ENCLOSURE										
EX-1	EXTERIOR	BOILER RM	7' - 0"	8' - 0"	F, F	HM	1	HM	45 MIN	REFER TO SECTION 13 34 19 FOR DOOR HARDWARE

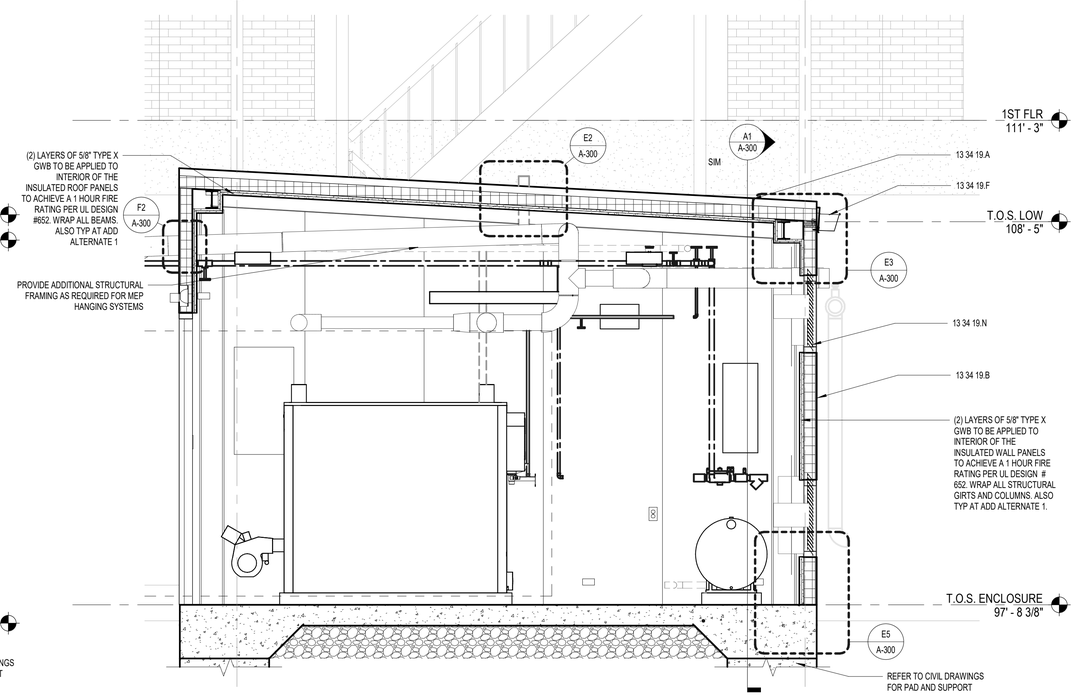
DOOR TYPES



C2 WALL AT ROOF
SCALE: 1 1/2" = 1'-0"



A1 BOILER ENCLOSURE WALL SECTION - N/S
SCALE: 1/2" = 1'-0"



A4 BOILER ENCLOSURE WALL SECTION - E/W
SCALE: 1/2" = 1'-0"

NORTH

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ISSUE LOG		
MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

△ = CLOUDED CHANGE

SCALE	As indicated
DRAWN BY	CRL
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WALL SECTIONS, DOOR SCHEDULE AND DETAILS

A-300

KEYNOTE LEGEND	
05 12 00.A	STRUCTURAL STEEL
13 34 19.B	INSULATED METAL WALL PANEL(S)
13 34 19.G	DOWNSPOUT
13 34 19.N	LOUVER
26 00 00.D	ELECTRICAL PANEL

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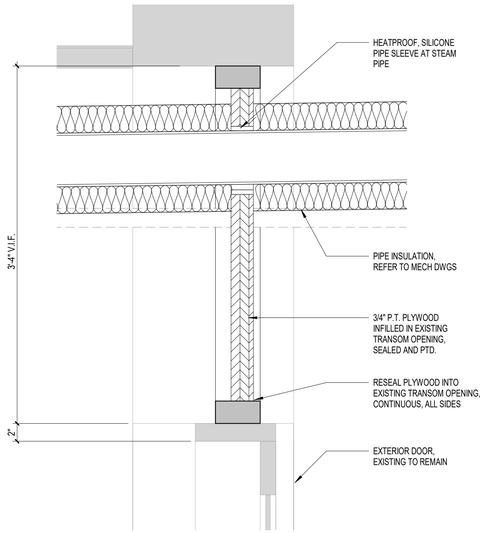
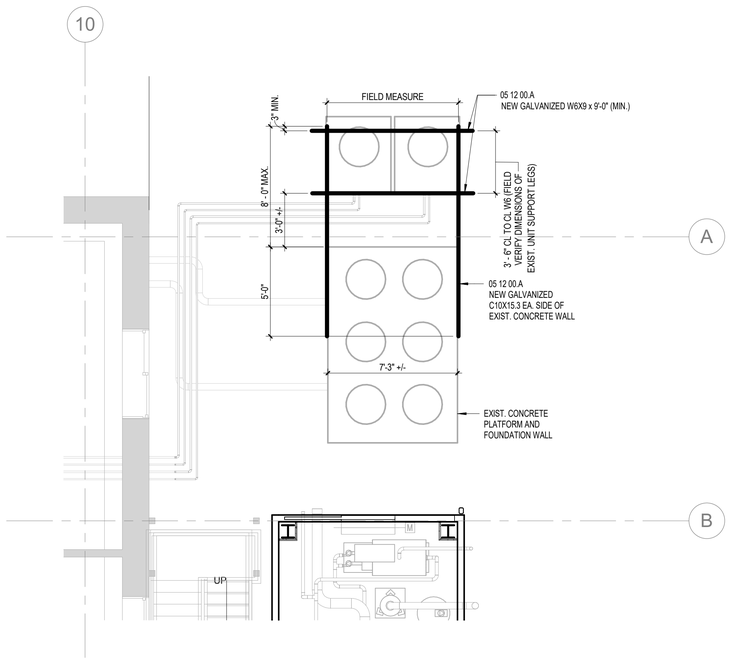
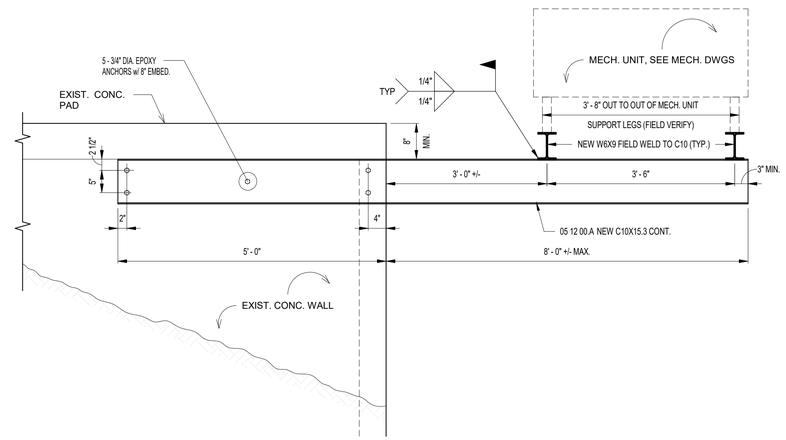


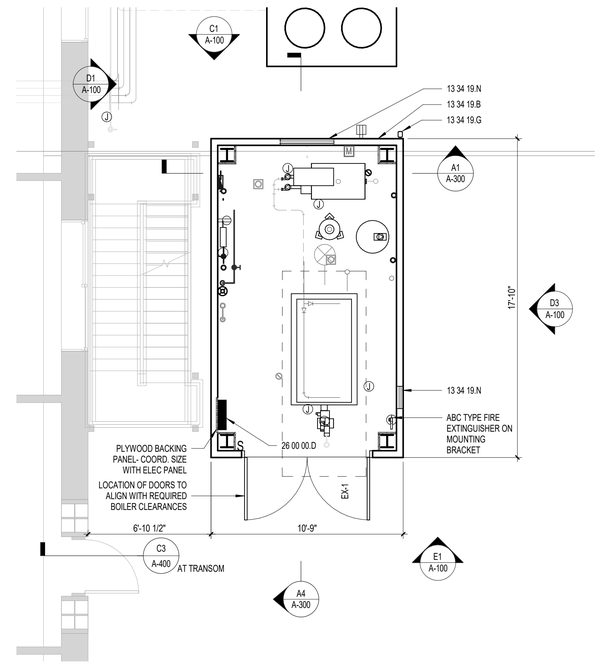
C3 PIPE PENETRATION AT EXISTING TRANSOM
SCALE: 1 1/2" = 1'-0"



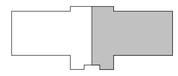
D5 CONDENSER RELOCATION PLAN
SCALE: 1/4" = 1'-0"



A2 CONDENSER RELOCATION SUPPORT
SCALE: 3/4" = 1'-0"



A5 BOILER ENCLOSURE - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN

MARK:	DATE:	DESCRIPTION:
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SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA
02143

ENLARGED PLANS AND DETAILS

A-400

ABBREVIATIONS

A	
ABAN	ABANDON
ABBRV	ABBREVIATION
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ASC	ABOVE SUSPENDED CEILING
ACS PNL	ACCESS PANEL
pH	ACID/ALKALINE SCALE
ACID RES V	ACID RESISTANT VENT
ACID RES W	ACID RESISTANT WASTE
AVTR	ACID VENT THROUGH ROOF
AV	ACID VENT
AVS	ACID VENT STACK
AW	ACID WASTE
AWS	ACID WASTE STACK
ADDM	ADDENDUM
ALT	ALTERNATE
ALT NO	ALTERNATE NUMBER
APPROX	APPROXIMATE
AD	AREA DRAIN
AAV	AUTOMATIC AIR VENT
ACHKV	AUTOMATIC CHECK VALVE
ACP	AUTOMATIC CONTROL PANEL
ACV	AUTOMATIC CONTROL VALVE
B	
BFP	BACKFLOW PREVENTER
BV	BALL VALVE
BT	BATH TUB
BLR	BOILER
BSTR	BOOSTER
BOT	BOTTOM
BOP	BOTTOM OF PIPE ELEVATION
BTUH	BRITISH THERMAL UNIT PER HOUR
BAS	BUILDING AUTOMATION SYSTEM
BCV	BUTTERFLY CHECK VALVE
BFV	BUTTERFLY VALVE
BYP	BY PASS
C	
CI	CAST IRON
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CLG	CEILING
CLDI	CEMENT LINED DUCTILE IRON
CTR	CENTER
CL	CENTERLINE
C TO C	CENTER TO CENTER
CHKV	CHECK VALVE
CHW	CIRCULATING HOT WATER
CO	CLEANOUT
COTG	CLEANOUT TO GRADE
CL D	CLOTHES DRYER
CW	COLD WATER PIPING
CWR	COLD WATER RISER
COL	COLUMN
CSB	CONCRETE SPLASH BLOCK
CNDS	CONDENSATE
CONN	CONNECT
CONT	CONTINUE
CONTR	CONTRACTOR
CP	CONTROL PANEL
COORD	COORDINATE
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CTE	CONNECT TO EXISTING
D	
DIW	DEIONIZED WATER
DEMO	DEMOLITION
DIAG	DIAGRAM
DIA	DIAMETER
DW	DISHWASHER
DHW	DOMESTIC HOT WATER
DWH	DOMESTIC WATER HEATER
DWR	DOMESTIC WATER RETURN
DWS	DOMESTIC WATER SUPPLY
DS	DOWNSPOUT
DWV	DRAIN, WASTE AND VENT
DWG	DRAWING
DFU	DRAINAGE FIXTURE UNIT
DF	DRINKING FOUNTAIN
E	
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EL	ELEVATION
EMER SHR	EMERGENCY SHOWER
EC	ELECTRICAL CONTRACTOR
EX	EXAMPLE
EXST	EXISTING
ETR	EXISTING TO REMAIN
ERD	EXISTING ROOF DRAIN
EXP	EXPANSION
EJ	EXPANSION JOINT
EWS	EYEWASH STATION
F	
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FIN FLR	FINISH FLOOR
FF EL	FINISH FLOOR ELEVATION
FIXT	FIXTURE
FLR	FLOOR
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FLR SK	FLOOR SINK
FV	FLUSH VALVE

G	
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GWH	GAS FIRED WATER HEATER
GC	GENERAL CONTRACTOR
GLV	GLOBE VALVE
GTV	GATE VALVE
GCVTR	GAS CONDUIT VENT THROUGH ROOF
GTVTR	GAS TRAIN VENT THROUGH ROOF
GVTR	GARAGE VENT THROUGH ROOF
GVS	GARAGE VENT STACK
GWS	GARAGE WASTE STACK
H	
HS	HAND SINK
HEX	HEAT EXCHANGER
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HPG	HIGH PRESSURE GAS
HTHW	HIGH TEMPERATURE HOT WATER
HP	HORSEPOWER
HB	HOSE BIBB
H&CW	HOT AND COLD WATER
HW	HOT WATER
HWR	HOT WATER RISER
HWCP	HOT WATER CIRCULATING PUMP
HTR	HOT WATER HEATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HWC	HOT WATER CIRCULATION PIPING
HWCR	HOT WATER CIRCULATION RISER
I	
IN	INCHES
IN WC	INCHES, WATER COLUMN
ID	INSIDE DIAMETER
IWH	INSTANTANEOUS WATER HEATER
INV EL	INVERT ELEVATION
IW	INDIRECT WASTE PIPING
IR	IRRIGATION WATER PIPING
J	
JAN CLO	JANITOR CLOSET
JS	JANOTOR'S SINK
K	
kWh	KILOWATT HOUIR
KIT	KITCHEN
KEC	KITCHEN EQUIPMENT CONTRACTOR
L	
LAB	LABORATORY
LAV	LAVATORY
LPC	LIMIT OF PLUMBING CONTRACT
LPG	LOW PRESSURE GAS
LTHW	LOW TEMPERATURE HOT WATER
M	
MAU	MAKE UP AIR UNIT
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MECH RM	MECHANICAL ROOM
M	METER
MEZZ	MEZZANINE
MIN	MINIMUM
MSB	MOP SERVICE BASIN
MS	MOP SINK
N	
G	NATURAL GAS
NS	NO SCALE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O	
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFD	OVERFLOW DRAIN
ORD	OVERFLOW ROOF DRAIN
OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED/OWNER INSTALLED
P	
PERF	PERFORATED
PH	PHASE
PSL	PIPE SLEEVE
PLBG	PLUMBING
PC	PLUMBING CONTRACTOR
PP	POLYPROPYLENE (PLASTIC)
PVC	POLYVINYL CHLORIDE (PLASTIC)
PVF	POLYVINYL FLUORIDE (PLASTIC)
POTW	POTABLE WATER
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH, ABSOLUTE
PSIG	POUNDS PER SQUARE INCH, GAUGE
PG	PRESSURE GAUGE
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
R	
R	RADIUS
RWL	RAIN WATER LEADER
RE	REMOVE EXISTING
RV	RELIEF VALVE
REQD	REQUIRED
R	RISER
RD	ROOF DRAIN
RTU	ROOF TOP UNIT
S	
S	SANITARY
SCHED	SCHEDULE
SCHEM	SCHEMATIC
SF	SQUARE FEET
SS	SERVICE SINK
SWR	SEWER
SHR	SHOWER
SHRD	SHOWER DRAIN
SHR HD	SHOWER HEAD
SOV	SHUT OFF VALVE
SK	SINK
SOLV	SOLENOID VALVE
SP GR	SPECIFIC GRAVITY
ST	STORM PIPING
SMP	SUMP PUMP
S/S	STAINLESS STEEL
SS	SOIL STACK
T	
TEMP	TEMPERATURE
T&P VALVE	TEMPERATURE AND PRESSURE RELIEF VALVE
THRU	THROUGH
TOP	TOP OF PIPE ELEVATION
TD	TRENCH DRAIN
T/S	TUB/SHOWER
TYP	TYPICAL
U	
UGND	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	
VAC	VACUUM
VB	VACUUM BREAKER
VEL	VELOCITY
VS	VENT STACK
VTR	VENT THROUGH ROOF
VIF	VERIFY IN FIELD
W	
WCO	WALL CLEANOUT
WH	WALL HYDRANT
WF	WASH FOUNTAIN
W	WASTE
WS	WASTE STACK
WC	WATER CLOSET
WC	WATER COLUMN
WH	WATER HEATER
WM	WATER METER
WT	WATERTIGHT
W/	WITH
W/O	WITHOUT

SYMBOLS:

	DN	PIPE DOWN THROUGH FLOOR
	UP	PIPE UP THROUGH FLOOR/ROOF ABOVE
		PIPE DROP
	WCO	WALL CLEANOUT
	CO	CLEANOUT
	GCO	GRADE CLEANOUT
	FCO	FLOOR CLEANOUT
		CAP
		PIPE BREAK
		UNION
	PG	PRESSURE GAUGE
	SOV	SHUT-OFF VALVE (TYPE PER SPECS)
	BV	BALANCING VALVE
	PRV-1	PRESSURE REDUCING VALVE AND TYPE
		FLOW ARROW
GM		GAS METER
	S&T	SAN AND TRAP
1/8"		PIPE SLOPE INDICATOR (DN/FT)
	MXV-1	MIXING VALVE & TYPE
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
	FD-1	FLOOR DRAIN & TYPE
		LIGHT LINE INDICATES EXISTING PIPING
		HEAVY LINE INDICATES NEW PIPING
		DOUBLE LINE INDICATES BURIED PIPING
	ETR	EXISTING TO REMAIN
	CTE	CONNECT TO EXISTING
G	CW	DOMESTIC COLD WATER PIPING
TWS	HW	DOMESTIC HOT WATER PIPING
	TWS	TEPID WATER PIPING
	V	VENT PIPING
	S	SANITARY PIPING
	V	VENT PIPING (BELOW SLAB OR GRADE)
S	S	SANITARY PIPING (BELOW SLAB OR GRADE)
G	G	NATURAL GAS PIPING
G	G	NATURAL GAS PIPING (BELOW SLAB OR GRADE)
	HTI	HEAT TRACED & INSULATED PIPING (FREEZE PROTECTION) (HEAT TRACE BY E.C.; INSULATION BY P.C.)

DETAIL NUMBER → 5 / DRAWING WHERE DETAIL OCCURS → P-501

DETAIL REFERENCE

EQUIPMENT TYPE → HTR / EQUIPMENT NUMBER → 1

EQUIPMENT TAG (ELECTRICAL EQUIPMENT)

PLUMBING GENERAL NOTES:

1. EXAMINE ALL CONTRACT DOCUMENTS FOR ALL TRADES. COMPLETELY COORDINATE THE WORK OF THIS SECTION WITH WORK OF OTHER TRADES AND PROVIDE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION.
   - FURNISH AND INSTALL ALL INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE PLUMBING WORK COMPLETE AND READY FOR OPERATION.
   - ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER, GENERAL CONTRACTOR, AND/OR THE OWNER'S REPRESENTATIVE, AND RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
   - COORDINATE PIPING LAYOUTS WITH OTHER TRADES BEFORE FABRICATION AND INSTALLATION.
   - COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS, AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN.
   - NO PIPING SHALL RUN OVER ELECTRICAL PANELS.
2. THE PLUMBING CONTRACTOR SHALL COORDINATE ALL WORK CONCERNING EXISTING EQUIPMENT AND SYSTEMS REMAINING IN THE BUILDING.
3. VERIFY THE INTEGRITY, CONDITION AND LOCATION OF EXISTING PIPING WHICH IS TO BE RETAINED. IF PIPING CANNOT BE RETAINED, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER TO DETERMINE EXTENT OF REPLACEMENT.
4. VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS PRIOR TO RUNNING ANY PIPING. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL FIXTURES AND EQUIPMENT. PROVIDE ACCESS PANELS FOR ALL EQUIPMENT REQUIRING PERIODIC SERVICE FOR ALL CONCEALED ISOLATION VALVES, COORDINATE EXACT LOCATIONS OF VALVES WITH ARCHITECT PRIOR TO ROUGHING TO DETERMINE ACCESS PANEL LOCATIONS.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACKCHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES HAVING JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND THE CONTRACT DOCUMENTS.
6. DRAWINGS ARE DIAGRAMMATIC: THESE DRAWINGS ARE NOT COORDINATION DOCUMENTS; THEY ARE INTENDED AND PREPARED TO HELP THE CONTRACTOR PREPARE COORDINATED MEP, ARCHITECTURAL, AND STRUCTURAL CONSTRUCTION DRAWINGS FOR BID. THE CONTRACTOR SHALL PREPARE AND SUBMIT A FULL MEP COORDINATED PACKAGE, PRIOR TO FABRICATION AND/OR CONSTRUCTION. DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. DO NOT SCALE DRAWINGS.
   - EXISTING PIPING AND EQUIPMENT SHOWN ON THESE DRAWING(S) MAY NOT REPRESENT ACTUAL "AS-BUILT" CONDITIONS, BUT DOES INDICATE THE ORIGINAL DESIGN CONCEPT AND INTENT. EXACT PIPE ROUTING WILL BE DETERMINED IN FIELD BY THE CONTRACTOR AND ARCHITECT DURING DEMOLITION WORK AND NEW WORK PHASES. THE CONTRACTOR SHALL MAKE MODIFICATIONS TO THE NEW WORK AS REQUIRED TO CONFORM TO EXISTING CONDITIONS.
7. INFORM AND COORDINATE WITH THE OWNER ALL NECESSARY INTERRUPTIONS TO EXISTING BUILDING SYSTEMS AND SERVICE THAT MAY AFFECT THE NORMAL OPERATION OF OCCUPIED PORTIONS OF THE BUILDING. THE OWNER SHALL BE INFORMED OF ANY INTERRUPTIONS AT LEAST 24 HOURS IN ADVANCE, AND GRANT PERMISSION PRIOR TO ANY SYSTEM COMPONENT SHUT-DOWN.
8. INFORM THE OWNER WELL IN ADVANCE OF ANY WORK TO BE UNDERTAKEN IN OCCUPIED AREAS OF THE BUILDING ASSOCIATED WITH THIS PROJECT. THE PLUMBING CONTRACTOR SHALL CONFORM TO THE OWNER'S CRITERIA FOR WORK HOURS, ENVIRONMENTAL ISOLATION, AND NOISE LIMITS IN THE PORTIONS OF THE BUILDING WHICH REMAIN OCCUPIED DURING CONSTRUCTION.
9. ALL FIXTURES, MATERIALS, AND EQUIPMENT PROVIDED UNDER DIVISION 22 SHALL BE IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS, CODES AND REGULATIONS.
   - ALL APPLICABLE WETTED COMPONENTS SHALL COMPLY WITH THE SAFE WATER DRINKING ACT (SWDA) LEAD REDUCTION REQUIREMENTS OF THE FEDERAL REDUCTION OF LEAD IN DRINKING WATER ACT - 2011.
   - ALL PRODUCTS SHALL BE INSTALLED IN COMPLIANCE WITH THE PRODUCT LISTING REQUIREMENTS AND THE MANUFACTURER'S RECOMMENDATIONS.
10. ALL PRODUCTS INSTALLED AS PART OF THE PLUMBING SYSTEM, INCLUDING BUT NOT LIMITED TO PLUMBING FIXTURES, FITTINGS AND TRIM, DRAINAGE SPECIALTIES, CONTROL VALVES, WATER AND EQUIPMENT, AND EQUIPMENT WITH WATER, WASTE OR GAS CONNECTIONS, SHALL BE APPROVED AND LISTED BY THE MASSACHUSETTS STATE BOARD OF EXAMINERS OF PLUMBERS AND GAS FITTERS IN CONFORMANCE WITH 248 CMR 3.04.
    - PRODUCTS FURNISHED OR INSTALLED UNDER OTHER SECTIONS OR BY THE OWNER SHALL INCLUDE DOCUMENTATION OF MASSACHUSETTS BOARD APPROVAL BEFORE INSTALLATION OR CONNECTION TO PLUMBING OR GAS PIPING SYSTEMS.
11. NO PRODUCT WILL BE ACCEPTED ON THE JOB SITE WITHOUT PRIOR APPROVAL BY THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL SUBMIT CATALOG SHEETS AND SHOP DRAWINGS OF ALL PLUMBING EQUIPMENT AND MATERIALS THE CONTRACTOR INTENDS TO USE. ANY NON-CONFORMING PRODUCT INSTALLED WILL BE SUBJECT TO REPLACEMENT WITH CONFORMING PRODUCTS AT NO ADDITIONAL COST TO THE OWNER.
12. PIPING PENETRATING FIRE RATED PARTITIONS SHALL BE PROTECTED WITH U.L. LISTED SEALS OF EQUAL RATING. wt
13. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE.
14. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES IN CORRIDORS AND WHERE INDICATED ON DRAWINGS. ALL VALVES SHALL BE ACCESSIBLE.
15. RUN ALL PIPING CONCEALED WHERE POSSIBLE, UNLESS OTHERWISE SPECIFIED.
16. ALL SLEEVES THROUGH CONCRETE FLOORS AND SMALLER FOR CONCRETE FLOORS AND WALLS SHALL BE BY THIS CONTRACTOR. CONCRETE PADS AND PLATFORMS FOR WORK OF THIS SECTION WILL BE PROVIDED BY GENERAL CONTRACTOR. PROVIDE INFORMATION AS NECESSARY TO COORDINATE WORK.
17. PROVIDE VENTS AT SYSTEM HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT SYSTEM LOW POINTS.
18. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED AS REQUIRED AND SHALL BE SEALED WATERTIGHT.
19. ALL VENT PIPING TO TERMINATE FURTHER THAN 25' AWAY FROM AND 3' ABOVE ALL MECHANICAL AIR INTAKES.

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1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG

△ = CLOUDED CHANGE

SCALE	NTS
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LEGEND, NOTES AND ABBREVIATIONS

P-001

SMMA

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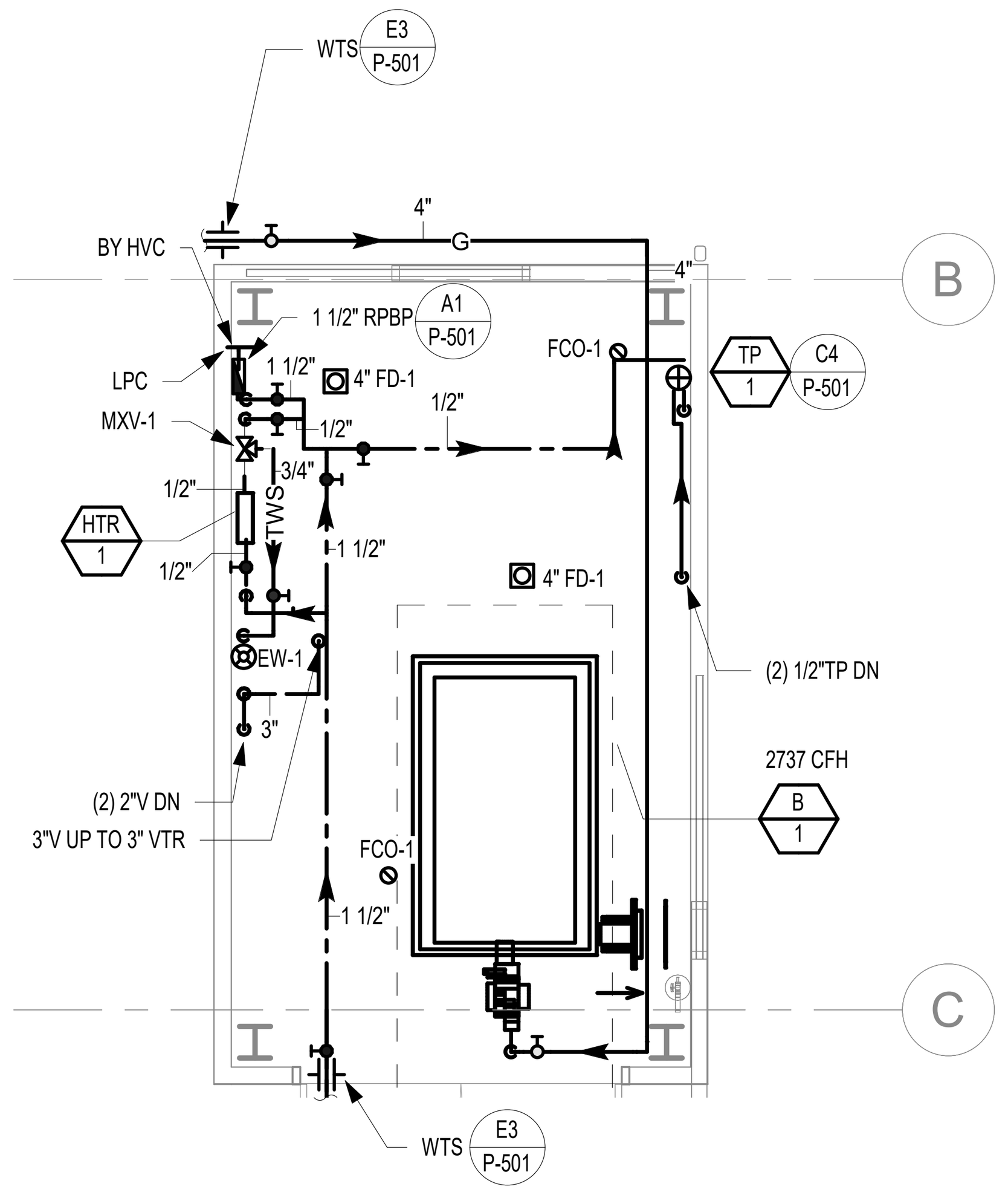
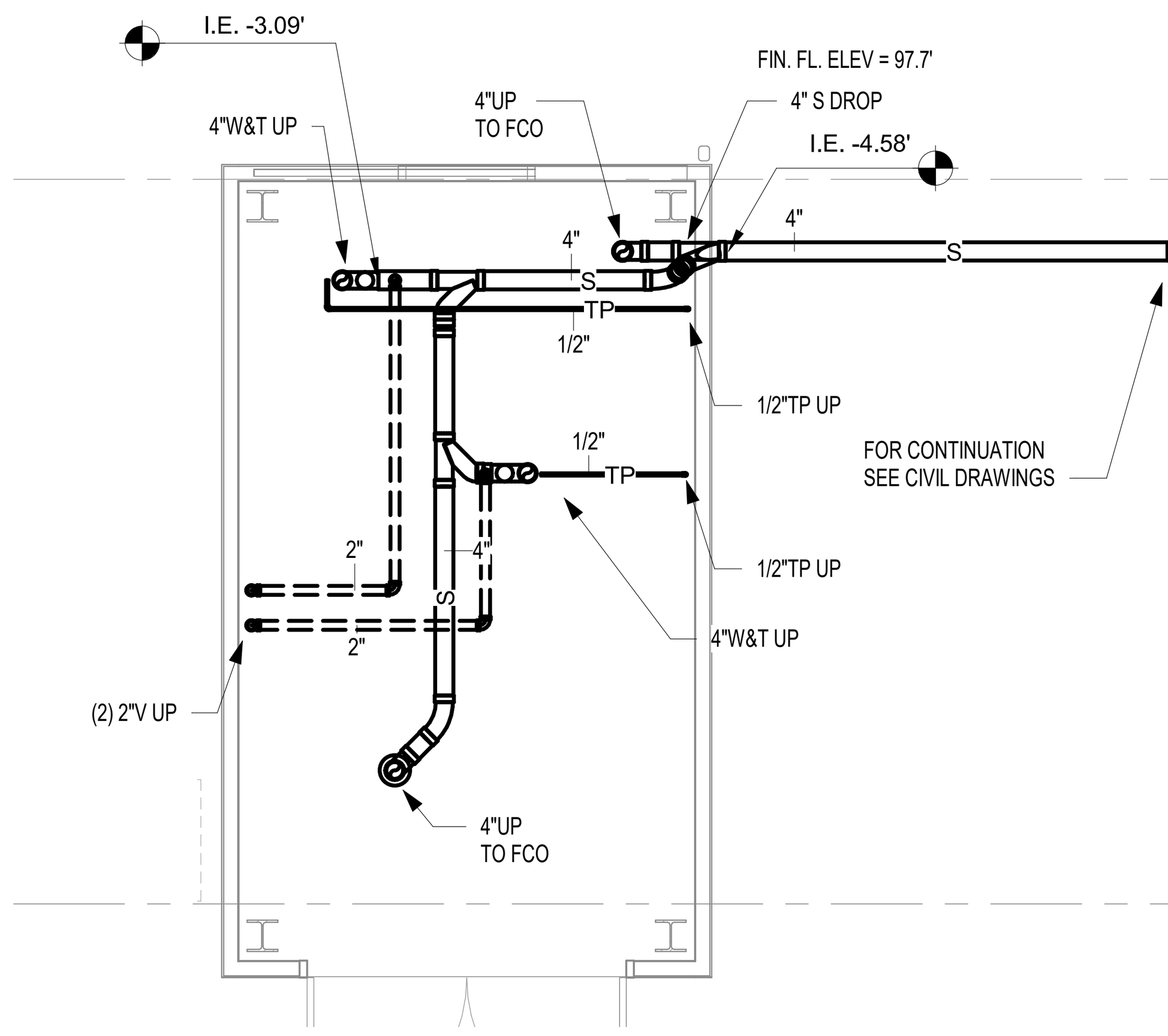
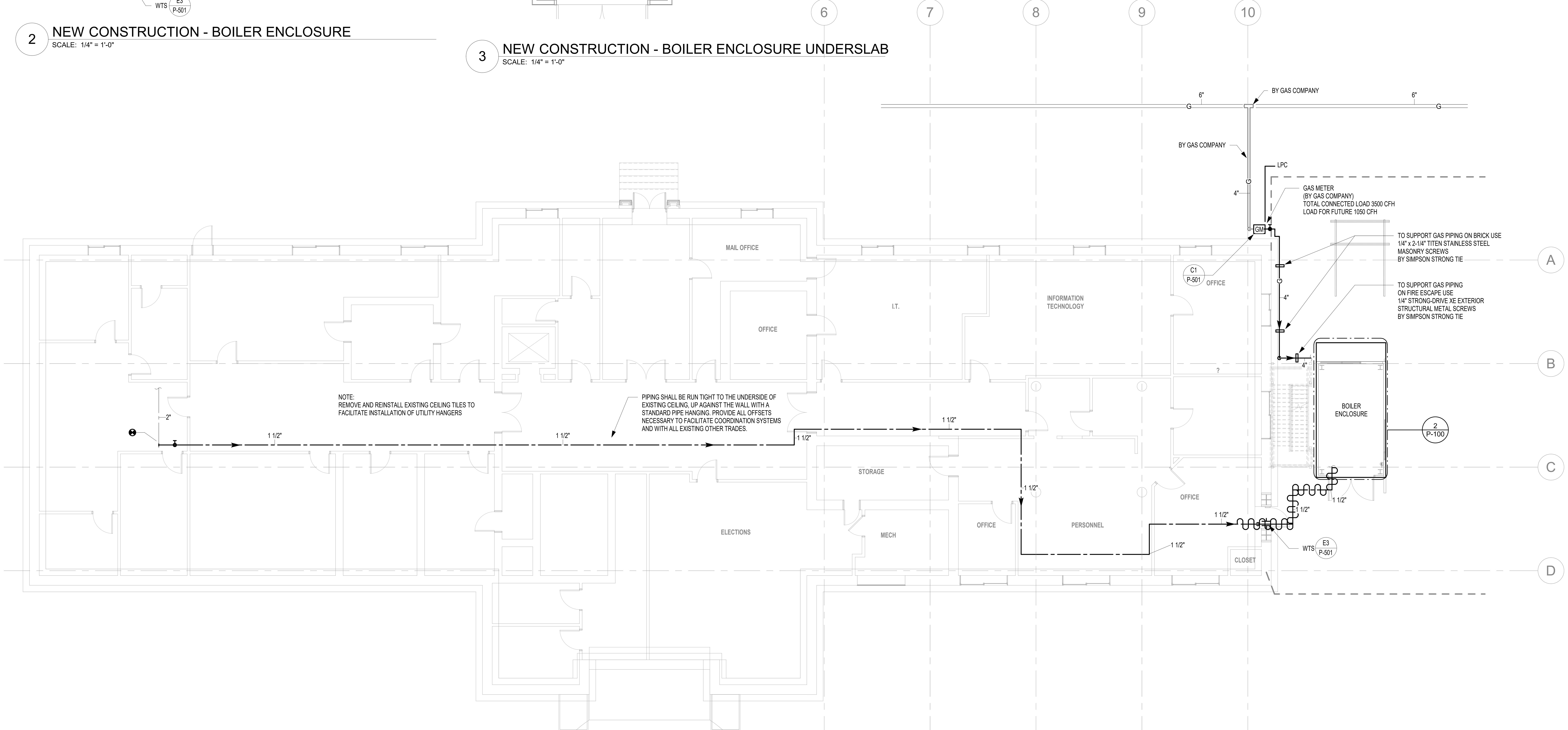


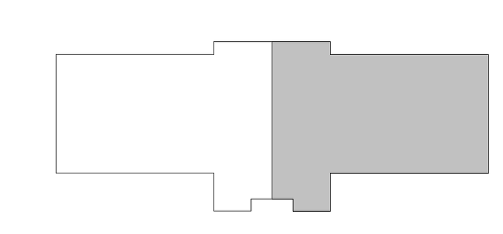
2 NEW CONSTRUCTION - BOILER ENCLOSURE
SCALE: 1/4" = 1'-0"



3 NEW CONSTRUCTION - BOILER ENCLOSURE UNDERSLAB
SCALE: 1/4" = 1'-0"



1 BASEMENT - NEW CONSTRUCTION
SCALE: 1/8" = 1'-0"



KEY PLAN

NORTH

SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA
02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG

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BASEMENT CONSTRUCTION PLAN

P-100

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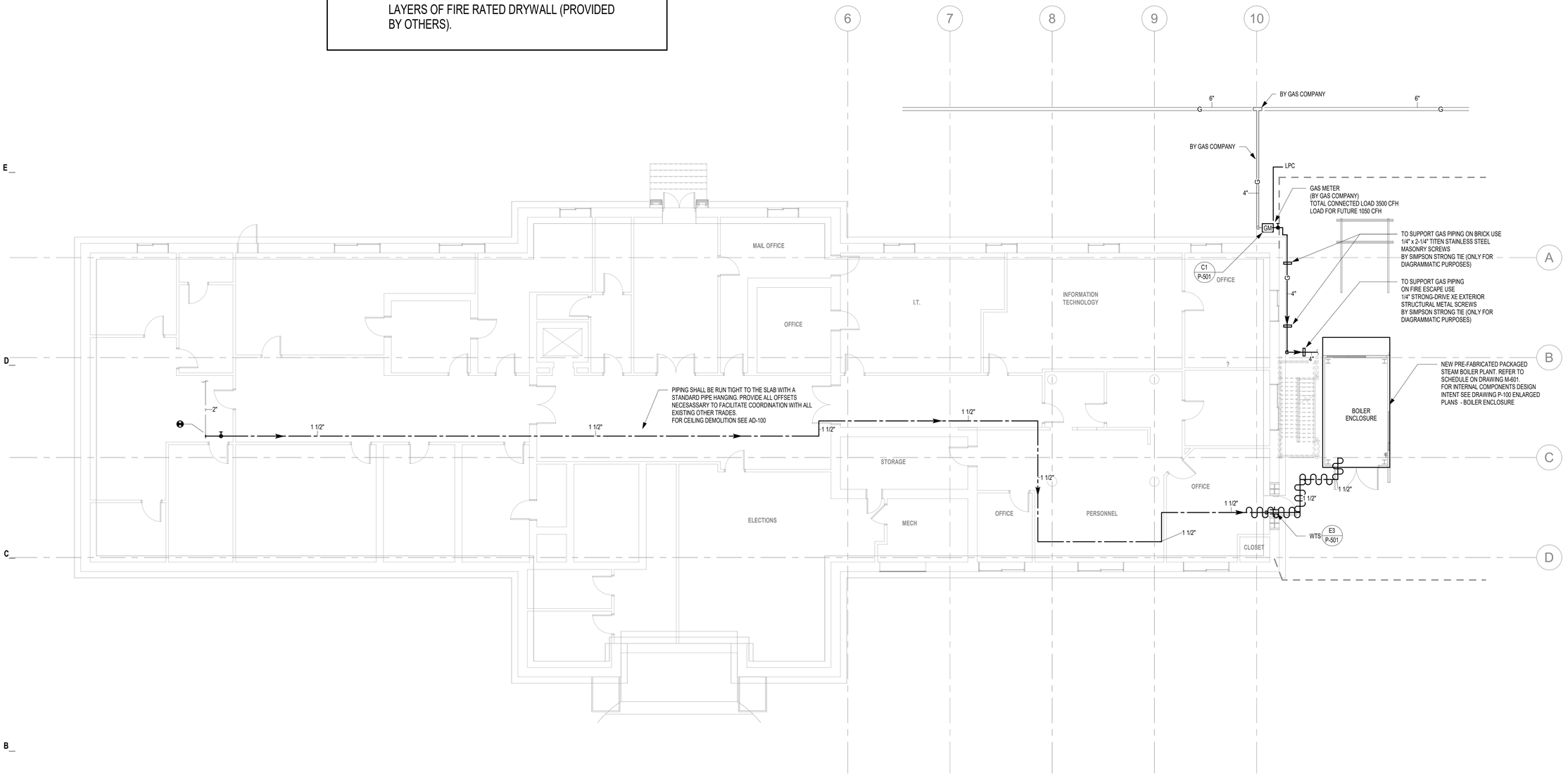
NOTE:

PRE-FABRICATED BOILER PLANT MANUFACTURER TO MOUNT ALL PANELS, WIRING, PIPING AND OTHER COMPONENTS LOCATED ON WALLS AND CEILING ON 1-1/2" THICK BRACETS TO ALLOW PACE FOR TWO LAYERS OF FIRE RATED DRYWALL (PROVIDED BY OTHERS).



1 BASEMENT - NEW CONSTRUCTION - ALTERNATE
SCALE: 1/8" = 1'-0"

SOMERVILLE CITY
HALL BOILER PLANT
93 Highland Ave, Somerville, MA
02143

MARK:	DATE:	DESCRIPTION:
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ISSUE LOG
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SCALE	1/8" = 1'-0"
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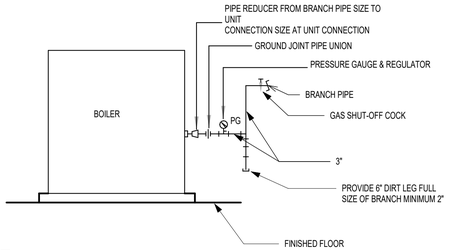
BASEMENT CONSTRUCTION PLAN - ALTERNATE

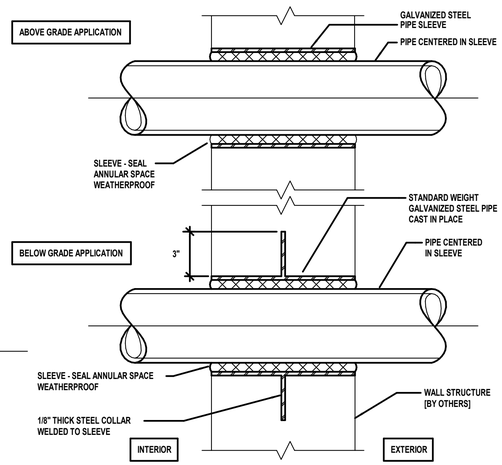
KEY PLAN

NORTH

P-100A



E1 EQUIPMENT GAS CONNECTION DIAGRAM
SCALE: NTS



E3 WATER TIGHT SLEEVES (WTS)
SCALE: NTS

PLUMBING FIXTURE SCHEDULE

FIXTURE DESIG.	DESCRIPTION	MOUNTING	H / C	FIXTURE	FLOW RATE	CARRIER	TEPID WATER	COLD WATER	HOT WATER	REMARKS
EW-1	EYE WASH	WALL	YES	G1819	3 GPM	GUARDIAN	3/4"			-
MXV-1	MIXING VALVE	-	-	G3600LF		GUARDIAN	3/4"	1/2"	1/2"	-

WATER HEATER

TAG NO.	SERVICE/ LOCATION	MAX FLOW	MIN FLOW	RECOVERY RATE GPH 20°	ELECTRICAL DATA kW	ELECTRICAL DATA VOLTAGE (PH/V)	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL NO.	REMARKS
HTR-1 1	BOILER ROOM	4.8	0.3	2.0	5.8	1/208	RHEEM	RTEX-08	DELIVERY TEMPERATURE @ 110 F

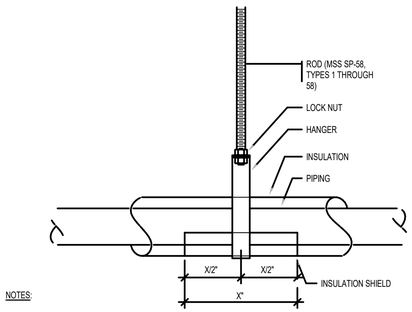
TRAP PRIMER VALVE SCHEDULE

DESIGNATION	TRAP PRIMER LOCATION	MANUFACTURER & MODEL	INLET SIZE	OUTLET SIZE(S)	ELECTRICAL	REMARKS
TP-1	BOILER ROOM	PRECISION PLUMBING PRODUCTS MINI-PRIME ENERGY MANAGEMENT SYSTEM #MP-500-115V	1/2"	1/2"	120 V	PLUMBING CONTRACTOR TO OWN ALL PIPING TO AND FROM TRAP PRIMING UNIT TO FLOOR DRAIN LOCATIONS. CAP ANY UNUSED PORTS AT TRAP PRIMER. SLOPE PIPING TO FS'S. PROVIDE ACCESS PANEL (IF REQUIRED) AT TRAP PRIMER.

DRAIN SCHEDULE

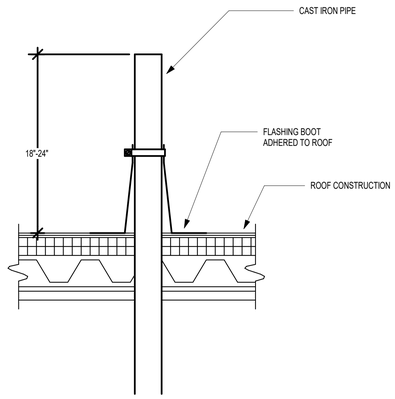
FIXTURE DESIG.	BASIS OF DESIGN	DESCRIPTION	REMARKS
FD-1	ZURN MODEL 4" Z1920-P-2-6	SANI-FLOR RECEPTOR	-
FCO-1	JAY R. SMITH MODEL 4256C	CAST IRON BRONZE PLUG	UNFINISHED AREAS (SLAB ON GRADE)

INSULATION SHIELD LENGTH "X"				
PIPE SIZE	INSULATION THICKNESS 1/2"	3/4"	1"	GAUGE
1/2" TO 3"	12"	12"	12"	18

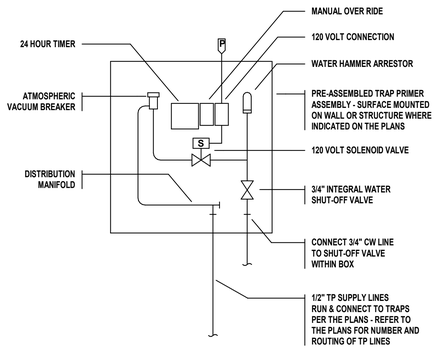


NOTES:
1. HANGER SHIELD IS REQUIRED FOR ALL INSULATED PIPE.
2. INSERTS SHALL BE INSTALLED BETWEEN THE PIPE AND HANGER SHIELD TO SUPPORT THE PIPE AND PREVENT THE PIPE INSULATION FROM BEING CRUSHED.

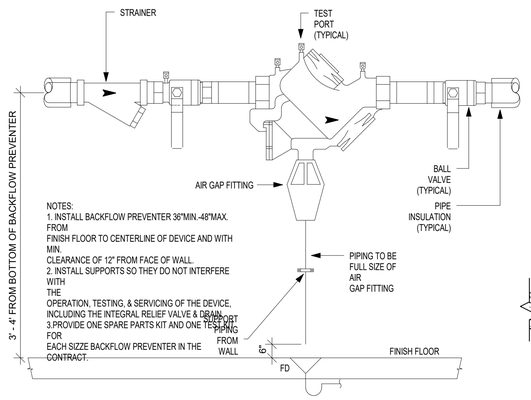
C1 PIPE HANGER AND SHIELD DETAIL
SCALE: NTS



C3 VENT THROUGH ROOF (VTR)
SCALE: NTS

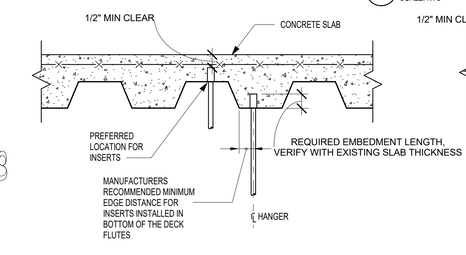


C4 AUTOMATIC TRAP PRIMER
SCALE: NTS

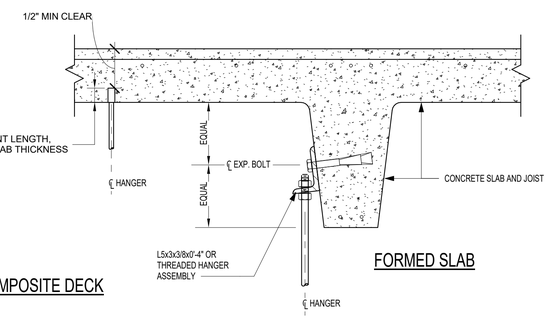


NOTES:
1. INSTALL BACKFLOW PREVENTER 36"MIN.-48"MAX. FROM FINISH FLOOR TO CENTERLINE OF DEVICE AND WITH MIN. CLEARANCE OF 12" FROM FACE OF WALL.
2. INSTALL SUPPORTS SO THEY DO NOT INTERFERE WITH THE OPERATION, TESTING, & SERVICING OF THE DEVICE, INCLUDING THE INTEGRAL RELIEF VALVE & DRAIN PORT.
3.PROVIDE ONE SPARE PARTS KIT AND ONE TEST KIT FOR EACH SIZE BACKFLOW PREVENTER IN THE CONTRACT.

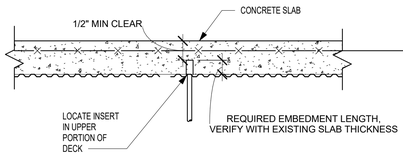
A1 REDUCED PRESSURE BACKFLOW PREVENTER 1-1/2"
SCALE: NTS



SLABS ON COMPOSITE DECK



FORMED SLAB

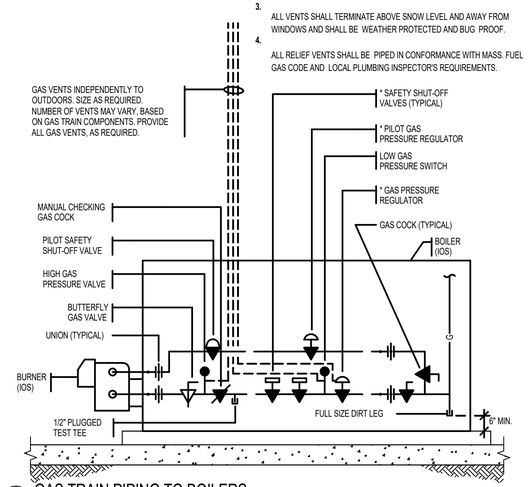


SLABS ON FORM DECK

GENERAL NOTES:
1. COORDINATE HANGING LOCATIONS AND DETAILS WITH OTHER TRADES. ATTEND A PRE-INSTALLATION CONFERENCE WITH GENERAL CONTRACTOR, ARCHITECT AND OTHER TRADES TO REVIEW HANGING METHODS AND COORDINATE HANGING LOCATIONS.
2. DO NOT HANG FROM ROOF DECK.
3. SUBMIT ALTERNATE METHODS FOR HANGING TO ARCHITECT FOR REVIEW AND DO NOT USE WITHOUT WRITTEN APPROVAL FROM ARCHITECT.
4. SEE SPECIFICATIONS FOR SEISMIC BRACING REQUIREMENTS.

FOR PIPING ø6" AND SMALLER FLOOR HANGING

NOTES:
1. * FURNISHED BY HEATING CONTRACTOR AND INSTALLED BY PLUMBING CONTRACTOR.
2. ALL OTHER VALVES, PIPE AND FITTINGS BY PLUMBING CONTRACTOR.
3. ALL VENTS SHALL TERMINATE ABOVE SNOW LEVEL AND AWAY FROM WINDOWS AND SHALL BE WEATHER PROTECTED AND BUG PROOF.
4. ALL RELIEF VENTS SHALL BE PIPED IN CONFORMANCE WITH MASS. FUEL GAS CODE AND LOCAL PLUMBING INSPECTOR'S REQUIREMENTS.



A6 GAS TRAIN PIPING TO BOILERS
SCALE: NTS

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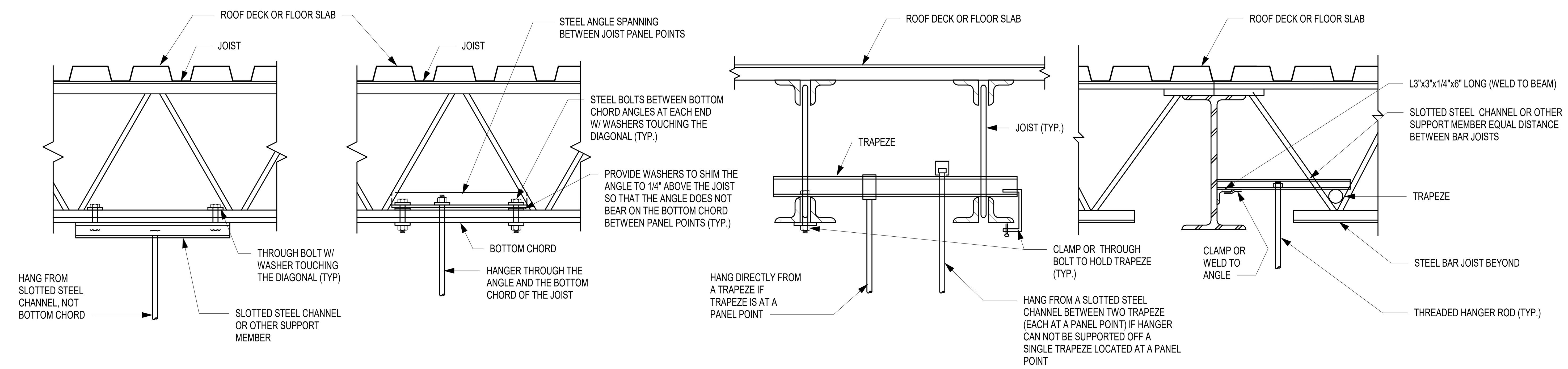
DETAILS & SCHEDULES

P-501

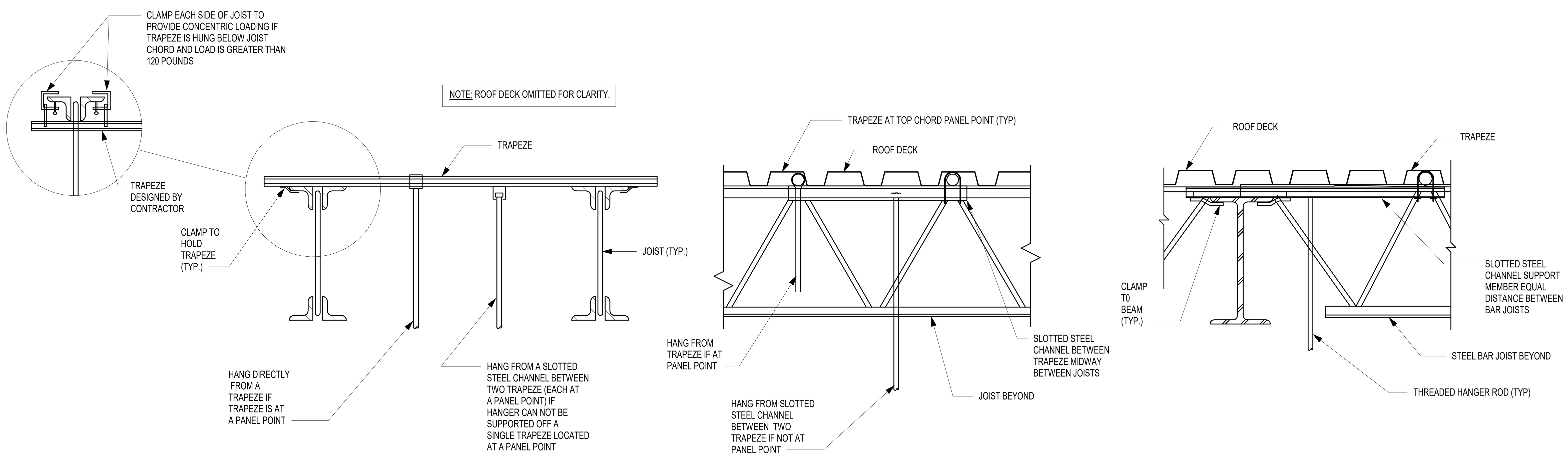
JOIST HANGING NOTES:
1. DO NOT HANG PIPES AND EQUIPMENT FROM STEEL DECK OR FROM BRIDGING ANGLES.
2. WHERE POSSIBLE SUSPEND HANGERS FROM WIDE-FLANGED BEAMS, NOT FROM BAR JOISTS.
3. UTILITIES, INCLUDING PIPING, DUCTWORK AND CONDUIT RUNNING PARALLEL TO BAR JOISTS, WHERE THE LOAD IS 25 POUNDS PER LINEAR FOOT OR LESS, MAY BE HUNG FROM A SINGLE JOIST.
4. UTILITIES, INCLUDING PIPING, DUCTWORK AND CONDUIT, RUNNING PARALLEL TO BAR JOISTS, WHERE THE LOAD IS GREATER THAN 25 POUNDS PER LINEAR FOOT, SHALL BE SUPPORTED MID-WAY BETWEEN TWO JOISTS.
5. WHERE PAIRS OF PIPES RUN PERPENDICULAR TO BAR JOISTS, STAGGER HANGERS BETWEEN ALTERNATE JOISTS, OR HANG FROM EVERY JOIST.
6. THE TOTAL WEIGHT OF ALL UTILITIES, SERVICES, PIPING, DUCTWORK AND CONDUIT HANGING FROM A SINGLE POINT SHALL NOT EXCEED 200 LBS FOR K-SERIES JOISTS AND 400 LBS FOR LH AND DLH SERIES JOISTS UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS. WHEN THIS WEIGHT IS EXCEEDED, SUBMIT A DETAIL OF PROPOSED METHOD OF HANGING TO THE ARCHITECT FOR APPROVAL.
7. HANGERS MAY BE LOCATED BETWEEN PANEL POINTS PROVIDED THAT THEY DO NOT EXCEED THE FOLLOWING LOADS:

	K-SERIES JOISTS	LH & DLH- SERIES JOISTS
BETWEEN TOP CHORD PANEL POINTS	100 LBS	200 LBS
BETWEEN BOTTOM CHORD PANEL POINTS	50 LBS	100 LBS

8. ECCENTRIC HANGERS (C-CLAMPS) WILL BE ALLOWED FOR PIPING AND OTHER TRADES WHERE THE HANGER SPACING LIMITS THE TOTAL POINT LOAD TO 120 LBS OR LESS. C-CLAMPS FOR LOADS GREATER THAN 30 LBS, BUT NOT MORE THAN 120 LBS, MUST BE LOCATED AT JOIST PANEL POINTS UNLESS THE JOIST CHORD IS REINFORCED WITH AN ANGLE SIMILAR TO DETAIL "D".
9. WELDING OF JOISTS SHALL ONLY BE IN A DIRECTION PARALLEL TO JOIST CHORDS.

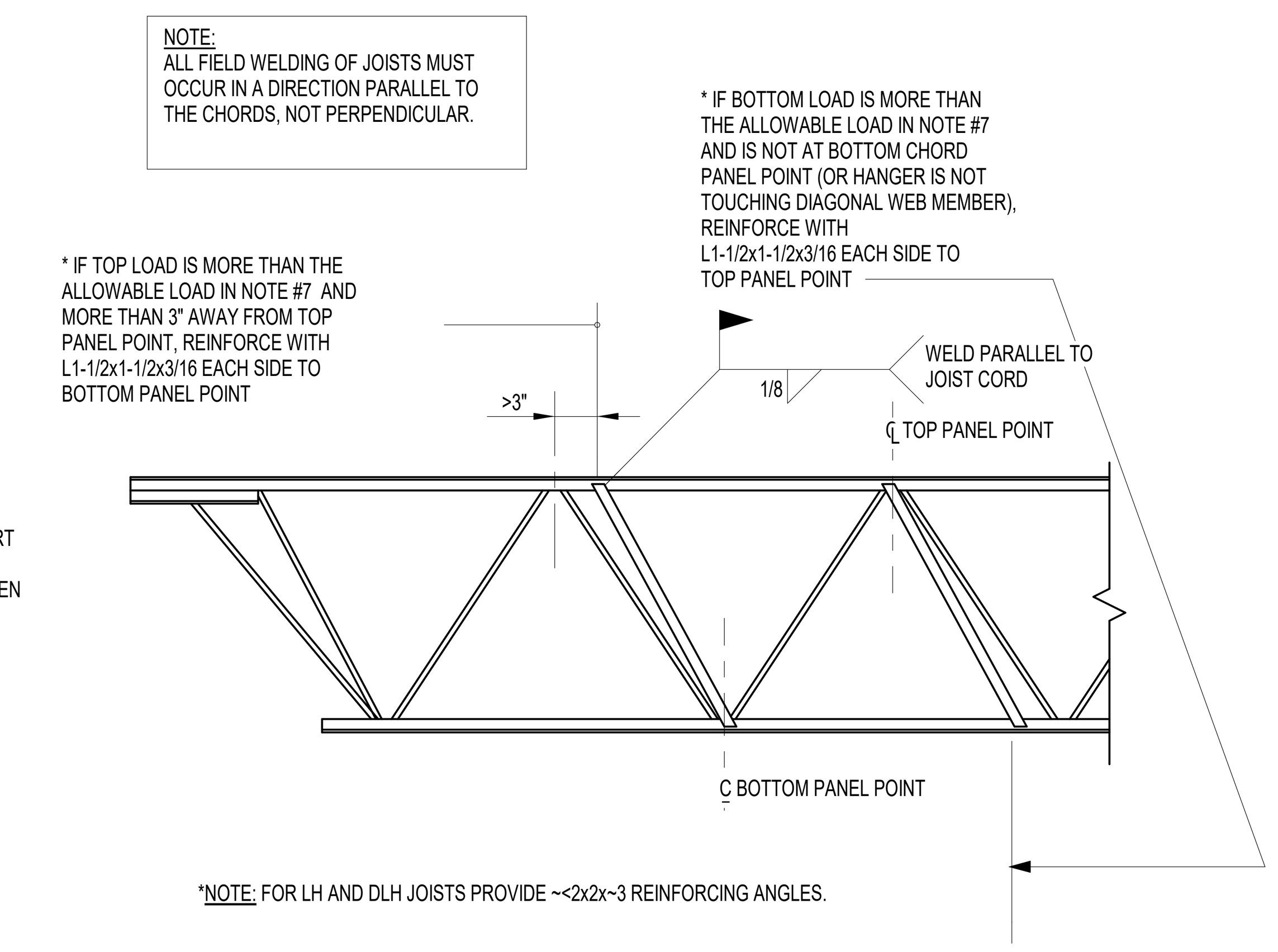


DETAIL "B" HANGING FROM BOTTOM CHORD



DETAIL "C" HANGING FROM TOP CHORD

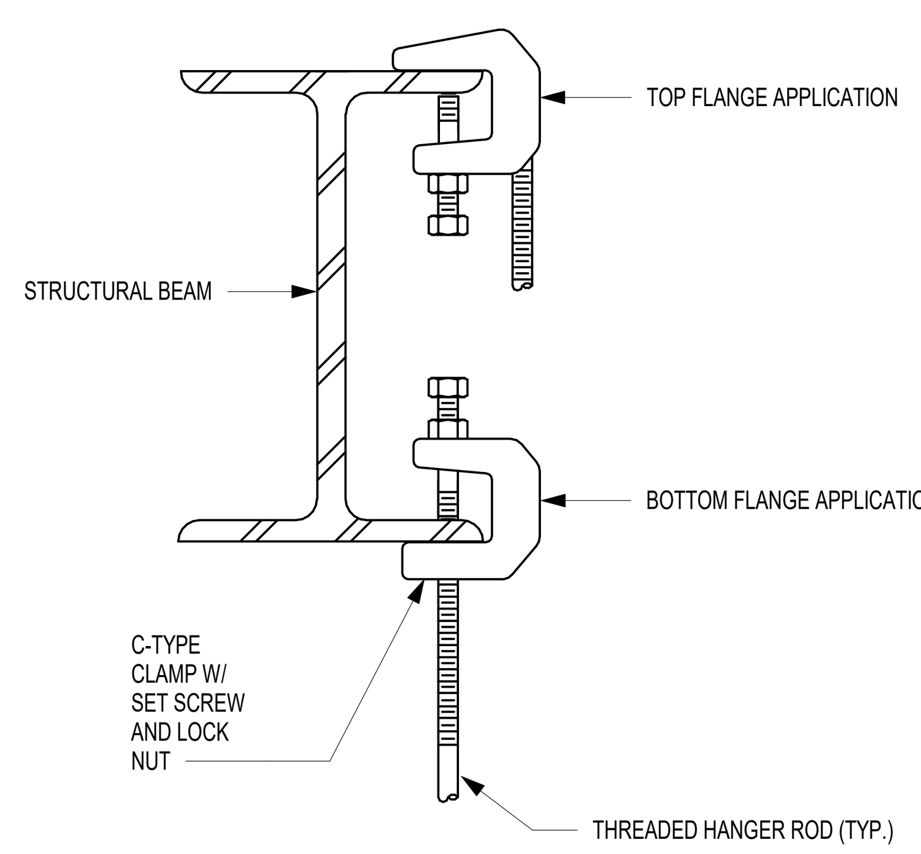
(APPLICABLE AT LOCATIONS WITH 1-1/2" MIN DEEP ROOF DECK)



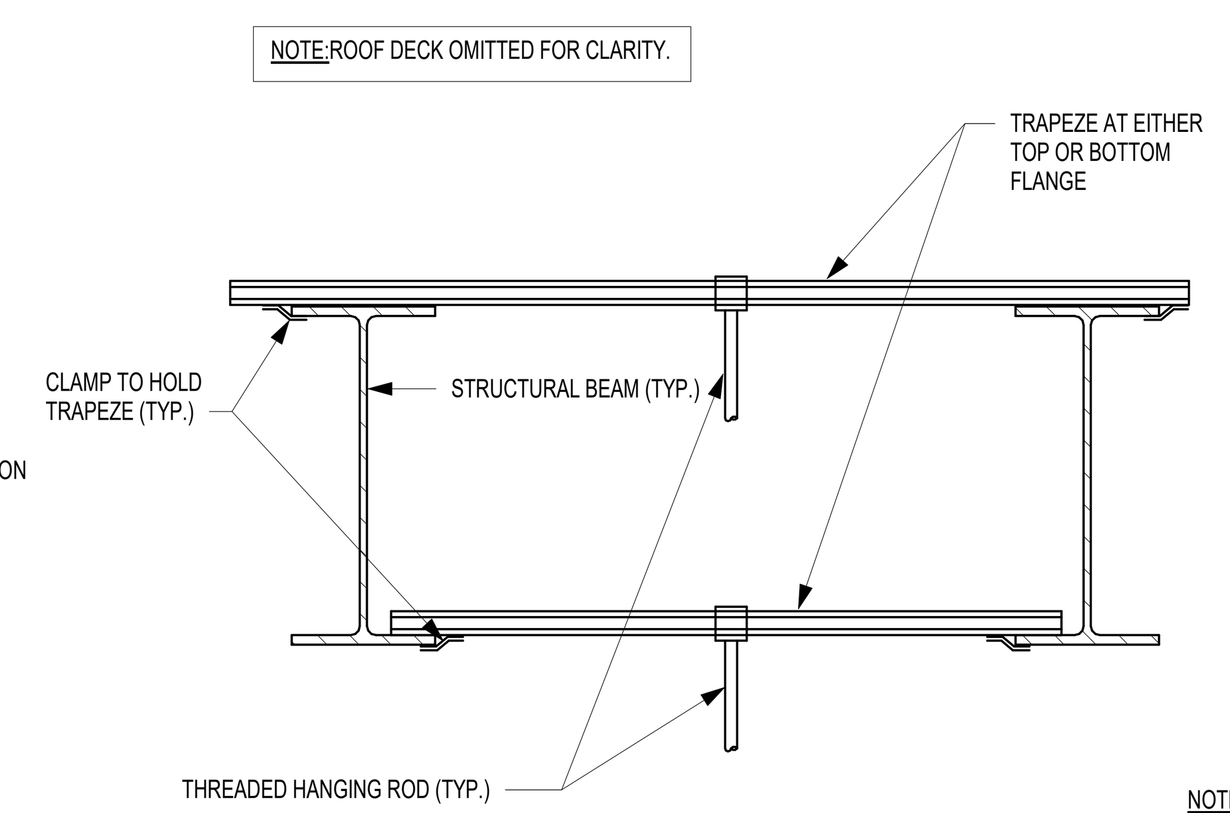
DETAIL "D" TYPICAL JOIST REINFORCING

(FOR LOADS NOT AT PANEL POINTS)

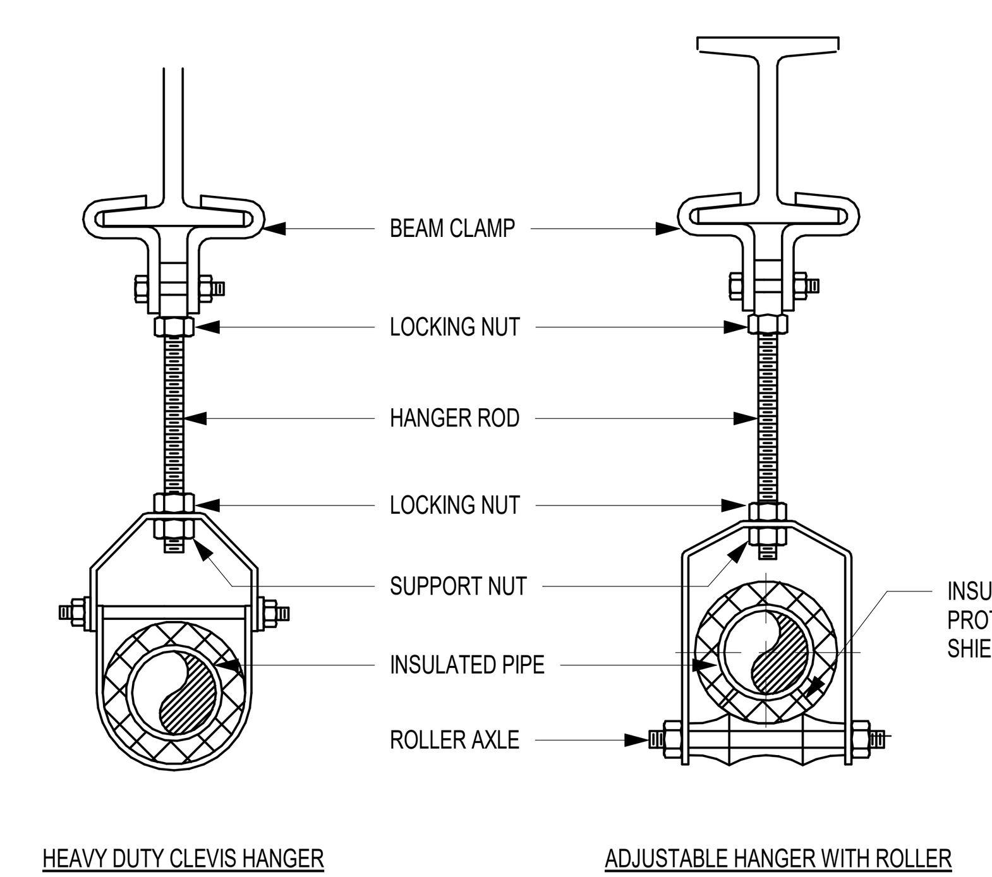
JOIST HANGING



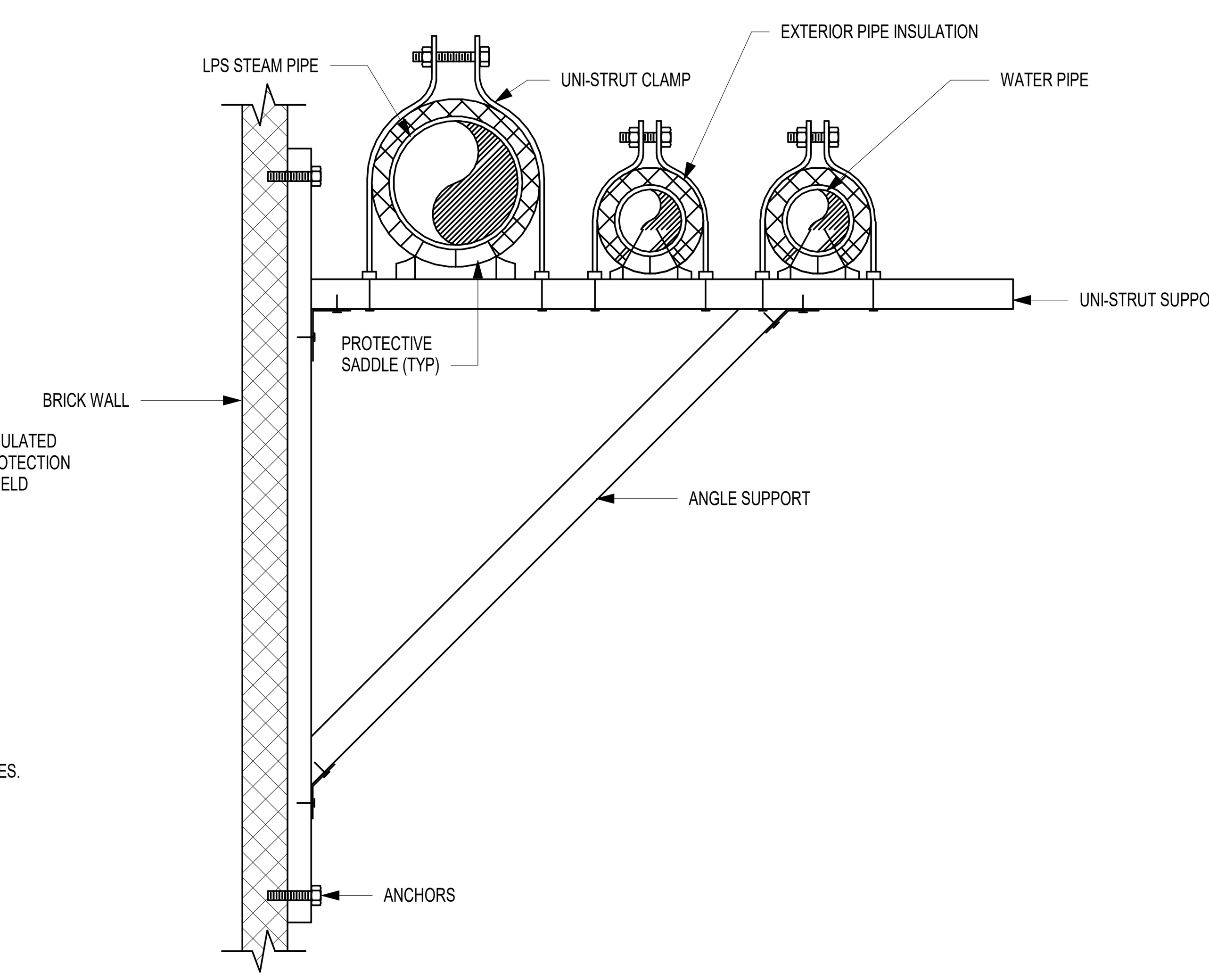
FOR PIPING ø10" AND SMALLER



BEAM HANGING



NOTES:
1. SIZE HANGER CLAMP TO ADEQUATELY SUPPORT LOAD.
2. REFER TO STRUCTURAL HANGING DETAILS FOR ATTACHMENTS.
3. IF INSULATED PIPE, SIZE HANGER PROPERLY. INSULATION SHIELDS FOR COLD LINES AND PROTECTION SADDLES FOR HOT LINES.
4. REFER TO SPECIFICATIONS FOR TYPE OF INSULATION PROTECTION SHIELD BASED ON PIPE SIZE.
5. REFER TO SMACNA SEISMIC RESTRAINT MANUAL FOR THREADED ROD AND SEISMIC RESTRAINT REQUIREMENTS.



NOTES:
1. WALL BRACKET SUPPORT ASSEMBLITE TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2. MECHANICAL CONTRACTOR TO SIZE ALL SUPPORTS AND ANCHORDS TO ADEQUATELY SUPPORT LOAD.
3. INSULATION SHIELDS - FOR COLD LINES AND PROTECTION SADDLES - FOR HOT LINES.
4. REFER TO SPECIFICATIONS FOR TYPE OF INSULATION PROTECTION SHIELD BASED ON PIPE SIZE.

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HANGING DETAILS

P-502

F D E C B A 1 2 3 4 5 6 7 8

ABBREVIATIONS

A	
ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AD	ACCESS DOOR
AP	ACCESS PANEL
ACT	ACOUSTICAL CEILING TILE
ADDM	ADDENDUM
ADDL	ADDITIONAL
ADJ	ADJUSTABLE; ADJACENT; ADJOINING
A/C	AIR CONDITIONING
ACCU	AIR COOLED CONDENSING UNIT
AF	AIR FOIL
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
AV	AIR VENT
ALM	ALARM
ALT	ALTERNATE; ALTITUDE
AC	ALTERNATING CURRENT
ALUM	ALUMINUM
AMB	AMBIENT
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AMP	AMPERE
ETC	ET CETERA
ARCH	ARCHITECT
A/E	ARCHITECT/ENGINEER
ASB	ASBESTOS
AI	ANALOG INPUT
AI	AIR INTAKE
AO	ANALOG OUTPUT
ACU	AIR CONDITIONING UNIT
ATM	ATMOSPHERE
ATTN	ATTENTION
AAV	AUTOMATIC AIR VENT
ACP	AUTOMATIC CONTROL PANEL
ACD	AUTOMATIC CONTROL DAMPER
ACV	AUTOMATIC CONTROL VALVE
AFC	AUTOMATIC FREQUENCY CONTROLLER
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AVG	AVERAGE
B	
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BAL	BALANCE
BV	BALL VALVE
BB	BASEBOARD
BSMT	BASEMENT
BAT	BATTERY
BLW	BELOW
BTW	BETWEEN
BLWDN	BLOWDOWN
BLR	BOILER
BFBP	BOILER FEED BOOSTER PUMP
BFU	BOILER FEED UNIT
BFW	BOILER FEEDWATER
BFWP	BOILER FEEDWATER PUMP
BOT	BOTTOM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
MBTU	BRITISH THERMAL UNIT (THOUSAND)
BTUH	BRITISH THERMAL UNIT PER HOUR
BRZ	BRONZE
BLDG	BUILDING
BAS	BUILDING AUTOMATION SYSTEM
BFV	BUTTERFLY VALVE
C	
CUH	CABINET UNIT HEATER
CO2	CARBON DIOXIDE
CO	CLEANOUT; CARBON MONOXIDE
CLG	CEILING
C	CELSIUS; CENTIGRADE
CTR	CENTER; COOLING TOWER RETURN
CM	CENTIMETER
CHW	CHILLED WATER
CHWPP	CHILLED WATER PRIMARY PUMP
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWSP	CHILLED WATER SECONDARY PUMP
CHWS	CHILLED WATER SUPPLY
CH	CHILLER
CLASS	CLASSIFICATION
CW	CLOCKWISE
COEFF	COEFFICIENT
COP	COEFFICIENT OF PERFORMANCE (HEATING)
CLR	COLOR; CLEAR; CLEARENCE
COL	COLUMN
COMM	COMMUNICATION
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CONN	CONNECT
CD	CONSTRUCTION DOCUMENTS
CONT	CONTINUE; CONTINUATION
CTRL	CONTROL
CP	CONTROL PANEL
CV	CONTROL VALVE
C/C	COOLING COIL
COORD	COORDINATE
CU	COPPER; CUBIC
CCW	COUNTERCLOCKWISE
CU FT	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CU IN	CUBIC INCH
M3	CUBIC METER
M3/S	CUBIC METER PER SECOND
CT	CURRENT TRANSMITTER
CRU	CONDENSATE RETURN UNIT
D	
DB	DRY BULB; DECIBEL
DAT	DISCHARGE AIR TEMPERATURE
D	DEEP; DEPTH; DRAIN
DEG	DEGREE
DEG C	DEGREES CELSIUS
DEG F	DEGREES FAHRENHEIT
DIW	DEIONIZED WATER
DEMO	DEMOLITION; DEMONSTRATION
DET	DETAIL
DP	DEW POINT
DPT	DEW POINT TEMPERATURE; DIFFERENTIAL PRESSURE TRANSMITTER
DIAG	DIAGRAM
DIA	DIAMETER
DPS	DIFFERENTIAL PRESSURE SENSOR
DPI	DIFFERENTIAL PRESSURE INDICATOR
DIFF	DIFFUSER; DIFFERENCE; DIFFERENTIAL
DIM	DIMENSION
DN	DOWN
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DO	DIGITAL OUTPUT
DISCH	DISCHARGE
DIST	DISTANCE
DIV	DIVISION; DIVIDE
DOC	DOCUMENT
DRLV	DOOR LOUVER
DWG	DRAWING
DBT	DRY BULB TEMPERATURE
DAP	DUCT ACCESS PANEL

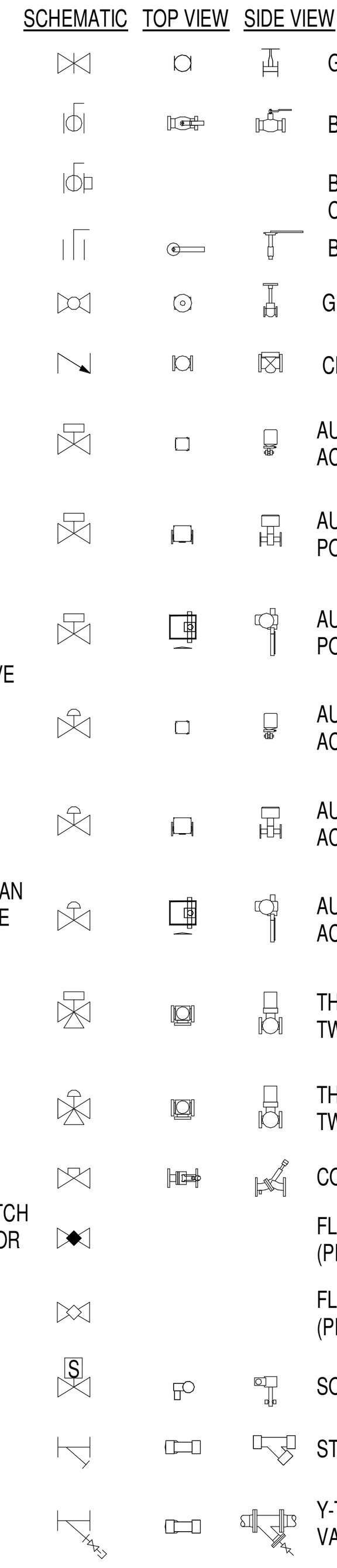
E	
ECC	ECCENTRIC
ECON	ECONOMIZER
ET	EXPANSION TANK
EFF	EFFICIENCY; EFFECTIVE
ELEC	ELECTRIC
EH	ELECTRIC HEATER
EHP	ELECTRIC HEATING PANEL
EP	ELECTRICAL PANEL (PANELBOARD)
ES	END SWITCH
EER	ENERGY EFFICIENCY RATIO
EMS	ENERGY MANAGEMENT SYSTEM
EAT	ENTERING AIR TEMPERATURE
EDBT	ENTERING DRY BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EWBT	ENTERING WET BULB TEMPERATURE
EQUIP	EQUIPMENT
EVAP	EVAPORATE
ECU	EVAPORATIVE COOLING UNIT
EX	EXAMPLE
EXH	EXHAUST
EA	EXHAUST AIR; EACH
EF	EXHAUST FAN
EXST	EXISTING
ETR	EXISTING TO REMAIN
EXP	EXPANSION; EXPAND; EXPOSED
EXT	EXTERIOR; EXTERNAL
ESP	EXTERNAL STATIC PRESSURE
F	
FA	FACE AREA; FIRE ALARM; FRESH AIR
FV	FACE VELOCITY
F	FAHRENHEIT
FCU	FAN COIL UNIT
FPB	FAN POWERED BOX
FF	FINAL FILTER
FDW	FEED WATER
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBER REINFORCED POLYESTER; FIBERGLASS REINFORCED PLASTIC
FIG	FIGURE
FLTR	FILTER
FTR	FINNED TUBE RADIATION
FPI	FINS PER INCH
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FD	FIRE DAMPER; FLOOR DRAIN
FP	FIRE PROTECTION
FLMB	FLAMMABLE
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP; FUEL OIL STORAGE TANK
FLEX	FLEXIBLE
FLR	FLOOR
FM	FLOWMETER; FACTORY MUTUAL
FS	FLOW SWITCH
FT	FOOT; FEET
FT/LB	FOOT/POUND
FT/LBF	FOOT/POUND FORCE
FSTAT	FREEZESTAT
FO	FUEL OIL
FOP	FUEL OIL PUMP
FOR	FUEL OIL RETURN
FOF	FUEL OIL RETURN LINE
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FLA	FULL LOAD AMPS
G	
GA	GAGE
GAL	GALLON
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPS	GALLONS PER SECOND
GALV	GALVANIZED
GEN	GENERAL; GENERATOR
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GLV	GLOBE VALVE
GRV	GRAVITY ROOF VENTILATOR; GROOVE
GV	GRAVITY VENT; GASOLINE VENT
GND	GROUND
GMP	GUARANTEED MAXIMUM PRICE
GYP	GYPSUM
H	
HOA	HAND-OFF-AUTOMATIC
HD	HAND DAMPER; HEAD
HC	HEATING COIL
H	HIGH; HUMIDITY
HX	HEAT EXCHANGER
HG	HEAT GAIN; MERCURY
HP	HEAT PUMP; HIGH PRESSURE; HORSEPOWER
Q	HEAT TRANSFER; RATE OF FLOW
U	HEAT TRANSFER COEFFICIENT
HTG	HEATING
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HT	HEIGHT
HZ	HERTZ
HDPE	HIGH DENSITY POLYETHYLENE
HEPA	HIGH EFFICIENCY PARTICULATE AIR (FILTER)
HPR	HIGH PRESSURE RETURN
HPS	HIGH PRESSURE STEAM
HTHW	HIGH TEMPERATURE HOT WATER
HR	HOUR
HB	HOSE BIBB
HW	HOT WATER
HWP	HOT WATER PUMP
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HWT	HOT WATER TANK
HSTAT	HUMIDISTAT
I	
ID	IDENTIFICATION; INSIDE DIAMETER; INSIDE DIMENSION
ID NO	IDENTIFICATION NUMBER
IN WC	INCHES, WATER COLUMN
IAQ	INDOOR AIR QUALITY
INFO	INFORMATION
IR	INFRARED; INSIDE RADIUS
I/O	INPUT/OUTPUT
INSUL	INSULATION
IBC	INTERNATIONAL BUILDING CODE
INV	EL INVERT ELEVATION
K	
KPA	KILPASCAL
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
L	
LAB	LABORATORY
LFU	LAMINAR FLOW UNIT
LH	LATENT HEAT; LEFT HAND
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB TEMPERATURE
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
LF	LINEAR FEET (FOOT)
L	LENGTH; LITER
LRA	LOCKED ROTOR AMPS
LVR	LOUVER

LVDR	LOUVER DOOR
LVD	LOUVERED
LP	LOW PRESSURE (MECHANICAL)
LPCR	LOW PRESSURE CONDENSATE RETURN
LPR	LOW PRESSURE RETURN
LPS	LOW PRESSURE STEAM
LTHW	LOW TEMPERATURE HOT WATER
M	
MCB	MAIN CIRCUIT BREAKER
MAU	MAKE UP AIR UNIT
MAV	MANUAL AIR VENT
MVD	MANUAL VOLUME DAMPER
MFR	MANUFACTURER; MASS FLOW RATE
MAX	MAXIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MECH	MECHANICAL
MED	MEDIUM; MEDICAL
MPR	MEDIUM PRESSURE RETURN
MPS	MEDIUM PRESSURE STEAM
MTG	MEETING; MOUNTING
MTL	METAL
M	METER
M/S	METERS PER SECOND
MEZZ	MEZZANINE
MM	MILLIMETER
MV	MILLIVOLT
MIN	MINIMUM; MINUTE
MCA	MINIMUM CIRCUIT AMPS
MISC	MISCELLANEOUS
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MB	MIXING BOX
MBH	1000 BTUH
MCC	MOTOR CONTROL CENTER
MOD	MOTOR OPERATED DAMPER
MOV	MOTOR OPERATED VALVE
MS	MOTOR STARTER
MTD	MOUNTED; MEAN TEMPERATURE DIFFERENCE
MULT	MULTIPLE
N	
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
G	NATURAL GAS
NEG	NEGATIVE
NT WT	NET WEIGHT
NTS	NOT TO SCALE
NC	NOISE CRITERIA; NORMALLY CLOSED
NIC	NOT IN CONTRACT
NR	NOISE REDUCTION
NO	NORMALLY OPEN; NUMBER
NA	NOT APPLICABLE
NPW	NON-POTABLE WATER
O	
OCC	OCCUPY
OC	ON CENTER
OED	OPEN ENDED DUCT
OR	OPERATING ROOM
OPP	OPPOSITE
OPT	OPTIONAL
OA	OUTSIDE AIR
OV	OUTLET VELOCITY
OAD	OUTSIDE AIR DAMPER
OD	OUTSIDE DIAMETER; OUTSIDE DIMENSION
O/	OVER
OVFL	OVERFLOW
OVRD	OVERRIDE
OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED/OWNER INSTALLED
O	OXYGEN
P	
P	PUMP
PKG	PACKAGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PT	PAINT; PIPE THREAD; PNEUMATIC TUBE; PRESSURE TREATED
PARA	PARAGRAPH
PART	PARTIAL
PA	PASCAL
PAT	PATTERN
PH	PENTHOUSE; PHASE; ACID/ALKALINE SCALE
PCT	PERCENT
PLBG	PLUMBING
PLYWD	PLYWOOD
PNEU	PNEUMATIC
PVC	POLYVINYL CHLORIDE (PLASTIC)
POC	POINT OF CONTACT
POS	POSITION; POSITIVE; PROVIDED BY OTHER SECTION
LB	POUND
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH, GAGE
PWR	POWER
PF	POWER FACTOR; PREFILTER
PCC	PRECOOL COIL
PCHWR	PROCESS CHILLED WATER RETURN
PCHWS	PROCESS CHILLED WATER SUPPLY
PREFAB	PREFABRICATE
PHC	PREHEAT COIL
PRESS	PRESSURE
PD	PRESSURE DROP OR DIFFERENCE
PG	PRESSURE GAGE
PP	PROCESS PUMP
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE; PRESSURE REGULATOR VALVE; PRESSURE RELIEF VALVE
PREV	PREVIOUS
Q	
QA	QUALITY ASSURANCE
QTY	QUANTITY
R	
RAD	RADIATOR; RETURN AIR DUCT; RADIUS; RADIAN
R	RISER; RANGE; RISER; THERMAL RESISTANCE
REC	RECESSED
RECT	RECTANGLE
REF	REFERENCE; REFRIGERATOR
RCP	REFLECTED CEILING PLAN
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE
REG	REGISTER; REGULATION
RHC	REHEAT COIL
RHV	REHEAT VALVE
RH	RELATIVE HUMIDITY; RIGHT HAND; ROOF HATCH
RV	RELIEF VALVE; ROOF VENT; ROOF VENTILATOR
RFI	REQUEST FOR INFORMATION
REQD	REQUIRED
RET	RETURN
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RO	REVERSE OSMOSIS
REV	REVISION; REVOLUTIONS
RPM	REVOLUTIONS PER MINUTE
RPS	REVOLUTIONS PER SECOND
RT	RIGHT
RTU	ROOF TOP UNIT
RM	ROOM
RND	ROUND

S	
SF	SAFETY FACTOR; SQUARE FOOT (FEET); SUPPLY FAN
SCHEM	SCHEMATIC
SHWR	SECONDARY HOT WATER RETURN
SHWS	SECONDARY HOT WATER SUPPLY
SECT	SECTION
SH	SENSIBLE HEAT
SHG	SENSIBLE HEAT GAIN
SHR	SENSIBLE HEAT RATIO
SP	SET POINT; STATIC PRESSURE
SC	SHADING COEFFICIENT
SK	SKETCH
SD	SMOKE DETECTOR; SHOP DRAWINGS; STORM DRAIN; SUPPLY DUCT
SP GR	SPECIFIC GRAVITY
SPEC	SPECIFICATION
SQ	SQUARE
SQ IN	SQUARE INCH
M2	SQUARE METER
SST	STAINLESS STEEL
SSP	STAINLESS STEEL PIPE
STD	STANDARD
S/S	START/STOP
SP	STATIC PRESSURE
STM	STEAM
SG	STEAM GENERATOR
STL	STEEL
STRB/HRN	STROBE/HORN
STRUCT	STRUCTURAL
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SYM	SYMBOL
SYMM	SYMMETRICAL
SYS	SYSTEM
T	
TEMP	TEMPERATURE; TEMPORARY
TCP	TEMPERATURE CONTROL PANEL
TCV	TEMPERATURE CONTROL VALVE
TD	TEMPERATURE DIFFERENCE; TRENCH DRAIN
TSTAT	THERMOSTAT
THRU	THROUGH
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TDH	TOTAL DYNAMIC HEAD
TSP	TOTAL STATIC PRESSURE
TG	TRANSFER GRILLE
TYP	TYPICAL
U	
UV	ULTRAVIOLET
UPS	UNINTERRUPTIBLE POWER SUPPLY
UH	UNIT HEATER
DBA	UNIT OF SOUND LEVEL
V	
VB	VACUUM BREAKER; VALVE BOX
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VEL	VELOCITY
VP	VELOCITY PRESSURE; VACUUM PUMP VAPOR PRESSURE
VTR	VENT THROUGH ROOF
VENT	VENTILATION; VENTILATOR
VIF	VERIFY IN FIELD
V	VOLT
VA	VOLT AMPERE
VOLT	VOLTAGE
VOL	VOLUME
VD	VOLUME DAMPER
W	
WC	WATER COLUMN
WG	WATER GAGE
WPD	WATER PRESSURE DROP
W	WATT; WIDE
WT	WEIGHT
WB	WET BULB
WMS	WIRE MESH SCREEN
W/	WITH
W/O	WITHOUT

PIPING DEVICE SYMBOLS

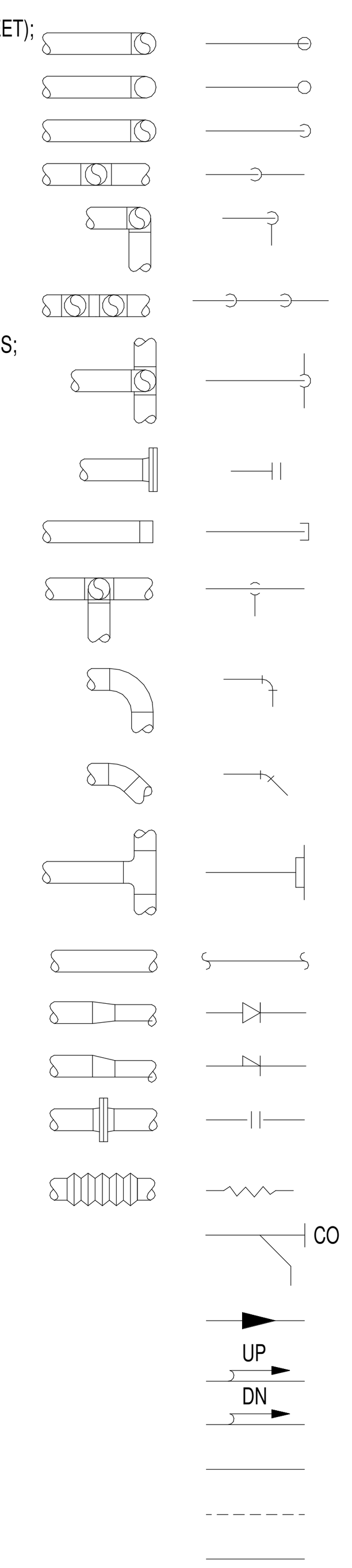
SCHEMATIC TOP VIEW SIDE VIEW



GATE VALVE
BALL VALVE
BALL VALVE W/ HOSE BIBB W/ CAP AND CHAIN
BUTTERFLY VALVE
GLOBE VALVE
CHECK VALVE
AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR, SIZE 1" AND SMALLER
AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR, SIZE 1-1/4" TO 6"
AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR, SIZE 8" AND LARGER
AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR, SIZE 1" AND SMALLER
AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR, SIZE 1-1/4" TO 6"
AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR, SIZE 8" AND LARGER
THREE WAY AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
THREE WAY AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
COMBINATION BALANCE/SHUT-OFF VALVE
FLOW CONTROL BALANCING VALVE (PRESSURE INDEPENDENT)
FLOW CONTROL BALANCING VALVE (PRESSURE DEPENDENT)
SOLENOID VALVE
STRAINER ASSEMBLY
Y-TYPE STRAINER WITH GATE VALVE DRAIN & HOSE END CAP

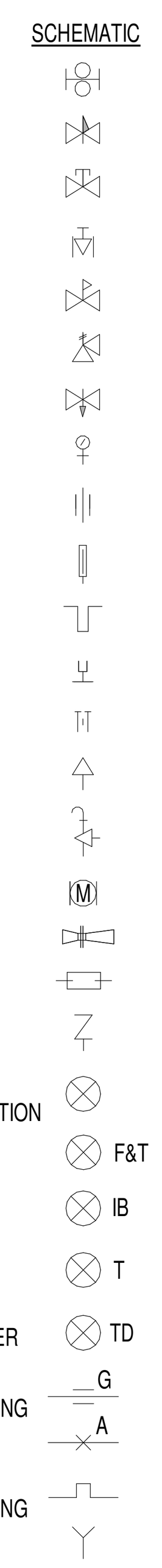
PIPING SYMBOLS

DOUBLE LINE SINGLE LINE



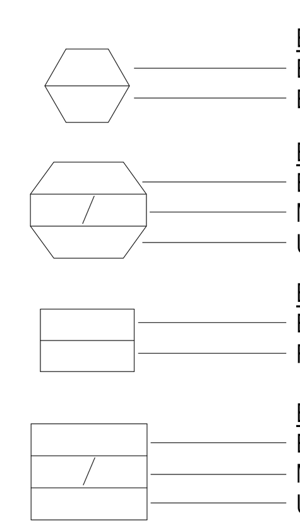
DOWN THRU FLR
UP THRU FLR ABV
DROP
DROP & RUN
DROP & TURN
OFFSET
BRANCH RISE
BLIND FLANGE
CAP
BRANCH DROP
90° ELBOW
45° ELBOW
TEE
BREAK
CONCENTRIC REDUCER
ECCENTRIC REDUCER
FLANGED CONNECTION
FLEXIBLE CONNECTOR
CLEAN OUT FOR CONDENSATE DRAIN
DIRECTION OF FLOW
PITCH PIPING UP IN DIRECTION OF FLOW
PITCH PIPING DOWN IN DIRECTION OF FLOW
SUPPLY PIPING
RETURN PIPING
EXISTING PIPING

SCHEMATIC



DUPLEX STRAINER
FUSIBLE LINK VALVE
LOCK SHEILD VALVE
PLUG VALVE
PRESSURE REDUCING VALVE
RELIEF VALVE OR SAFETY VALVE
NEEDLE VALVE
PRESSURE GAGE ASSEMBLY
UNION
THERMOMETER
THERMOMETER WELL
PRESSURE TEMPERATURE TAP W/ CAP
ORIFICE
AUTOMATIC AIR VENT
MANUAL AIR VENT
METER
FLOW MEASURING STATION
EXPANSION JOINT
VACUUM BREAKER
TRAP ASSEMBLY
FLOAT & THERMOSTATIC STEAM TRAP ASSEMBLY
INVERTED BUCKET STEAM TRAP ASSEMBLY
THERMOSTATIC STEAM TRAP ASSEMBLY
THERMODYNAMIC STEAM TRAP ASSEMBLY
PIPE GUIDE
PIPE ANCHOR
EXPANSION LOOP
FUNNEL DRAIN

EQUIPMENT TAGS



EQUIPMENT TAG - POWER REQUIRED
EQUIPMENT ABBREVIATION
EQUIPMENT NUMBER

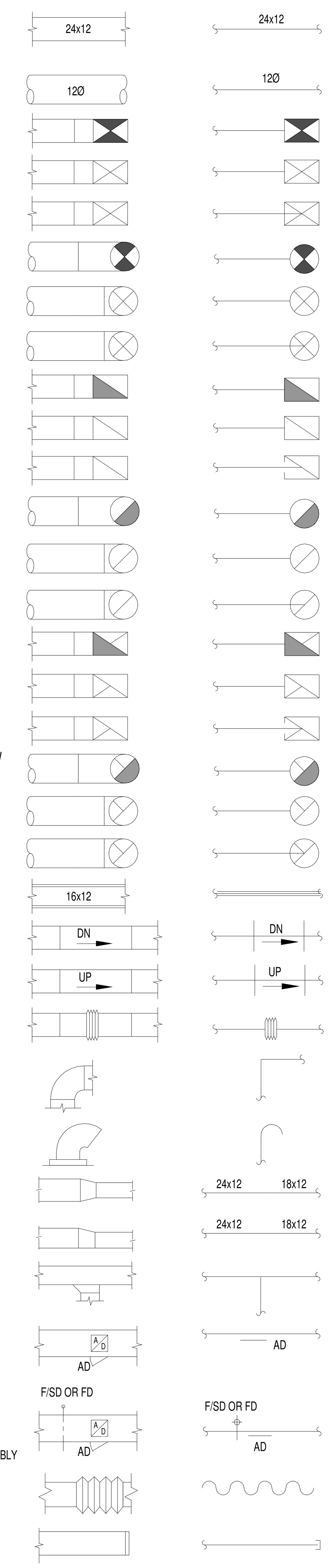
EQUIPMENT TAG - POWER REQUIRED
EQUIPMENT TAG NUMBER
MAX/MIN OCCUPIED AIRFLOW
UNOCCUPIED AIRFLOW

EQUIPMENT TAG - NO POWER REQUIRED
EQUIPMENT ABBREVIATION
FTR LENGTH OR EQUIPMENT NUMBER

EQUIPMENT TAG - NO POWER REQUIRED
EQUIPMENT TAG NUMBER
MAX/MIN OCCUPIED AIRFLOW
UNOCCUPIED AIRFLOW

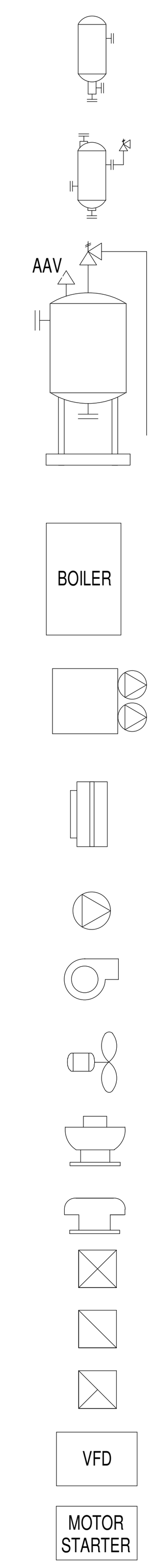
DUCTWORK SYMBOLS

DOUBLE LINE SINGLE LINE



RECTANGULAR DUCT DIMENSIONS (I.D. IN INCHES) FIRST DIMENSION IS PLAN VIEWED (WIDTH), SECOND DIMENSION IS HEIGHT
ROUND DUCT DIMENSION (IN INCHES)
SUPPLY DUCT ROOF PENETRATION
SUPPLY DUCT UP
SUPPLY DUCT DOWN
SUPPLY ROUND DUCT ROOF PENETRATION
SUPPLY ROUND DUCT UP
SUPPLY ROUND DUCT DOWN, OR AWAY FROM VIEWER
RETURN DUCT ROOF PENETRATION
RETURN DUCT UP
RETURN DUCT DOWN
RETURN ROUND DUCT ROOF PENETRATION
RETURN ROUND DUCT UP
RETURN ROUND DUCT DOWN, OR AWAY FROM VIEWER
EXHAUST DUCT ROOF PENETRATION
EXHAUST DUCT UP
EXHAUST DUCT DOWN
EXHAUST ROUND DUCT ROOF PENETRATION
EXHAUST ROUND DUCT UP
EXHAUST ROUND DUCT DOWN, OR AWAY FROM VIEWER
LINED DUCT - DIMENSION GIVEN IS INSIDE CLEAR
DUCT DROP IN DIRECTION OF AIR FLOW
DUCT RISE IN DIRECTION OF AIR FLOW
FLEXIBLE DUCT CONNECTION
RECTANGULAR ELBOW
GOOSENECK HOOD
DUCT TRANSITION (CONCENTRIC)
DUCT TRANSITION (ECCENTRIC)
BRANCH DUCT (NO SPLITTER W/ 45° FLARE)
ACCESS DOOR INTO DUCT (PLAN & ELEV. SHOWN)
FIRE/SMOKE DAMPER OR FIRE DAMPER W/ ACCESS DOOR
FLEXIBLE DUCT
DUCT CAP

EQUIPMENT SYMBOLS

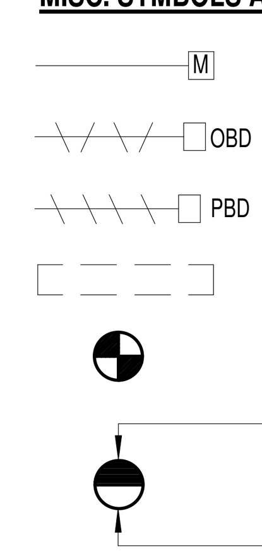


BLOW DOWN SEPARATOR
FLASH TANK
BUFFER TANK
BOILER
CONDENSATE RECEIVER AND PUMP
UNIT HEATER
PUMP
FAN
PROPELLER FAN
UPBLAST FAN
DOWNBLAST FAN
SUPPLY DIFFUSER
RETURN GRILLE OR REGISTER
EXHAUST GRILLE OR REGISTER
VARIABLE FREQUENCY DRIVE
MOTOR STARTER

PIPING SYSTEM ABBREVIATIONS

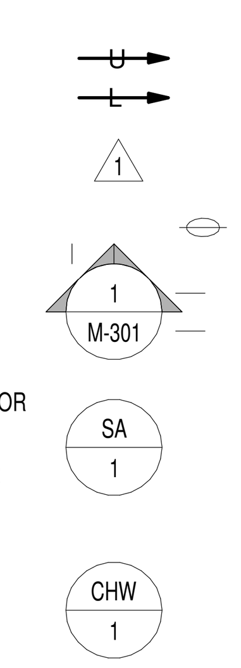
BBD	BOILER BLOWDOWN
BFW	BOILER FEED
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
D	DRAIN
HPR	HIGH PRESSURE RETURN (CONDENSATE)
HPS	HIGH PRESSURE STEAM
LPCR	LOW PRESSURE RETURN (CONDENSATE)
LPS	LOW PRESSURE STEAM
MPR	MEDIUM PRESSURE RETURN (CONDENSATE)
MPS	MEDIUM PRESSURE STEAM
MU	MAKE-UP WATER
PC	PUMPED CONDENSATE
RL	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE
V	VENT

MISC. SYMBOLS AND DEVICES



MOTORIZED DAMPER
OPPOSED BLADE DAMPER
PARALLEL BLADE DAMPER
DUCTWORK, PIPING AND/OR EQUIPMENT TO BE DEMOLISHED
CONNECT TO EXISTING
(THIS SIDE TO BE DEMOLISHED
LIMIT OF DEMOLITION
(THIS SIDE TO REMAIN)

SMOKE DETECTOR
THERMOSTAT
TEMPERATURE SENSOR
HUMIDISTAT
PRESSURE SENSOR
CARBON MONOXIDE SENSOR
CARBON DIOXIDE SENSOR
OCCUPANCY SENSOR
KEYED NOTE
AIR FLOW (SUPPLY)
AIR FLOW (RETURN OR EXHAUST)



DOOR UNDERCUT
DOOR LOUVER
REVISION NUMBER
FLAT OVAL DUCTWORK
SECTION DESIGNATION
DRAWING NUMBER
AIR RISER DESIGNATION
- SA SUPPLY AIR
- RA RETURN AIR
- EA EXHAUST AIR
- OA OUTSIDE AIR
PIPING SYSTEM RISER DESIGNATION
- CHW CHILLED WATER
- HW HOT WATER
- HP HEAT PUMP

** ALL ABBREVIATIONS AND SYMBOLS SHOWN MAY NOT APPLY**

GENERAL DRAWING NOTES

1. GENERAL DRAWING NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL "M" SERIES DRAWINGS.
2. DRAWINGS ARE DIAGRAMMATIC, THEREFORE DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
3. COORDINATE WORK OF THIS SECTION WITH WORK IN ALL OTHER SECTIONS.
4. ANY DEMOLITION IS TO BE COORDINATED WITH OWNER, ARCHITECT, GENERAL CONTRACTOR AND ENGINEER PRIOR TO START OF DEMOLITION.
5. OFFSETS IN PIPING AND DUCTWORK (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
6. SHEETMETAL FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTES SHALL BE ALLOWED WITHOUT PRIOR CONSENT FROM ARCHITECT/ENGINEER.
7. COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.
8. INSTALL THERMOSTATS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY ARCHITECT. MOUNTING HEIGHT AFF SHALL COMPLY WITH ADA REQUIREMENTS.
9. INSTALL DUCTWORK AND PIPING CONCEALED UNLESS SPECIFIED OTHERWISE. ALL DUCTWORK SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO WALLS AND UNDERSIDE OF STRUCTURE.
10. EXTERIOR LOUVERS ARE INDICATED FOR INFORMATION ONLY. DETAILED DESCRIPTIONS ARE PROVIDED IN ARCHITECTURAL SPECIFICATIONS.
11. ALL AIR TERMINAL DEVICES (BOXES; DAMPERS; ETC) AND SOUND ATTENUATORS ARE TO HAVE SAME MATERIAL CONSTRUCTION, PRESSURE CLASS, SEAL AND LEAKAGE CLASS AS ASSOCIATED DUCTWORK.
12. REFER TO SPECIFICATIONS FOR DUCTWORK CONSTRUCTION CLASSES, SEAL, AND LEAKAGE CLASSES.
13. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS PRIOR TO FABRICATION.
14. ALL EQUIPMENT AND DEVICES SHALL BE INSTALLED PER THE MANUFACTURERS INSTALLATION REQUIREMENTS AND EQUIPMENT DETAILS. DISCREPANCIES BETWEEN THE MANUFACTURERS INSTALLATION REQUIREMENTS AND EQUIPMENT DETAILS SHALL BE RESOLVED WITH THE ARCHITECT/ENGINEER PRIOR TO INSTALLATION. PROVIDE REQUIRED STRAIGHT LENGTH OF DUCT AND/OR PIPE RUN UPSTREAM AND DOWNSTREAM OF INLINE DEVICES AND/OR EQUIPMENT AS INDICATED IN MANUFACTURERS INSTALLATION REQUIREMENTS.
15. ACCESS PANELS SHALL BE PROVIDED TO CLEAN COILS AND SERVICE DAMPERS, HEATERS, VALVES AND ALL CONCEALED MECHANICAL EQUIPMENT.
16. ALL CONDENSATE DRAIN LINES SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, CONNECTED TO PLUMBING AS INDICATED ON DRAWINGS. PROVIDE CLEAN-OUTS AT EACH PIPING OFFSET.
17. CONCRETE HOUSEKEEPING PADS AND STEEL PLATFORMS FOR MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE SIZE AND LOCATION OF PADS WITH GENERAL CONTRACTOR.
18. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE TO PROVIDE A VIBRATION FREE INSTALLATION. PROVIDE TO GENERAL CONTRACTOR A LIST OF ALL WEIGHTS AND METHODS OF SUPPORT FOR COORDINATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
19. THE MECHANICAL DRAWINGS CANNOT BE FULLY AND CORRECTLY INTERPRETED WITHOUT REFERENCE TO SYMBOLS, SCHEDULES, ABBREVIATIONS AND SPECIFICATIONS. IT IS THE INTENT OF THE DRAWINGS TO SHOW THE INSTALLATION, AS DETAILED BY THE TYPICAL ARRANGEMENTS. ITEMS SHOWN ONCE ON FLOOR PLANS, ELEVATIONS, DETAILS OR DIAGRAMS MAY NOT BE REPEATED IN FULL FOR OTHER TYPICAL INSTANCES. THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND GENERAL ARRANGEMENT, NOT THE SPECIFIC DETAILS OF CONSTRUCTION.

SMMA

SYMMES MAINI & McKEE ASSOCIATES
1000 Massachusetts Avenue
Cambridge, Massachusetts 02138
P:617.547.5400 F:617.648.4920

SOMERVILLE CITY HALL BOILER PLANT

93 Highland Ave, Somerville, MA
02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

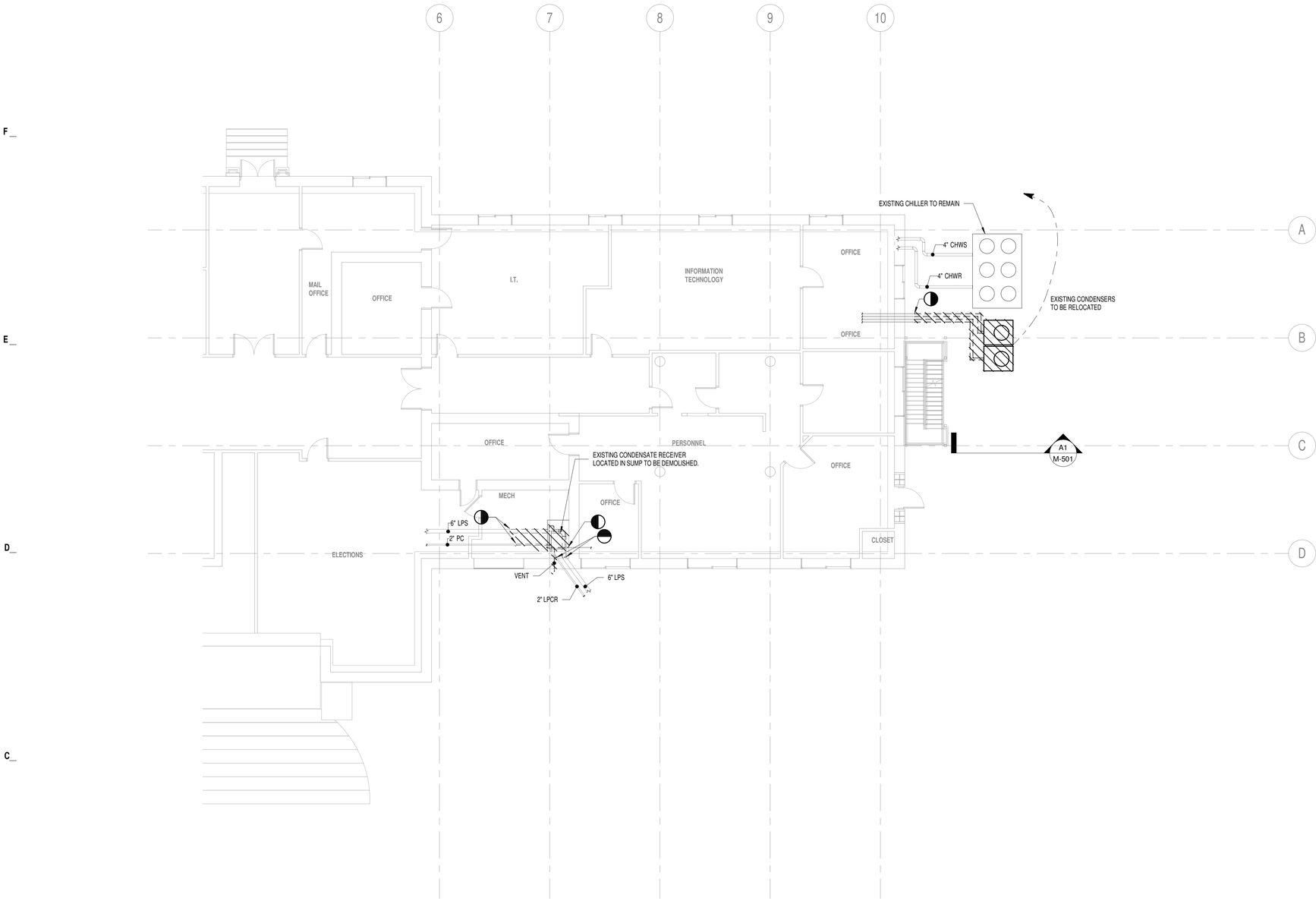
ISSUE LOG

△ = CLOUDED CHANGE

SCALE	NTS
DRAWN BY	AHC / BDH
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

LEGEND SHEET

M-001



B1 BASEMENT - DEMO PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. CONTRACTOR TO PHASE THE CONDENSER RELOCATIONS SO COOLING OPERATION IS CONTINUOUS FOR THE IT ROOM DURING CONSTRUCTION. DO NOT DISABLE AND DISCONNECT THE SECOND CONDENSER, UNTIL THE FIRST CONDENSER IS RELOCATED, STARTED, AND TESTED.

SMMA

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SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA
02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG
△ = CLOUDED CHANGE

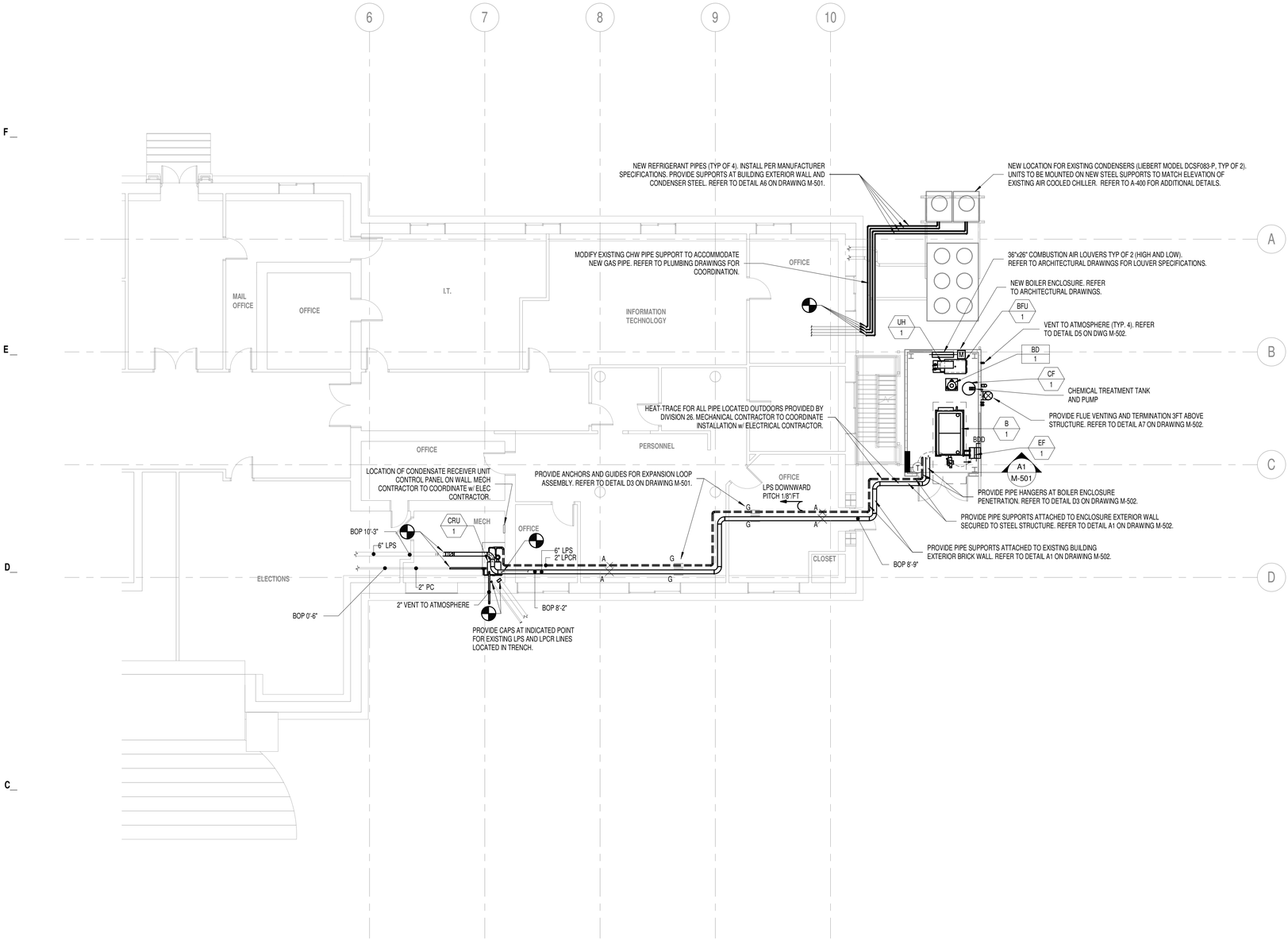
SCALE	As indicated
DRAWN BY	AHC / BDH
CHECK BY	--
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

BASEMENT DEMOLITION PLAN

KEY PLAN

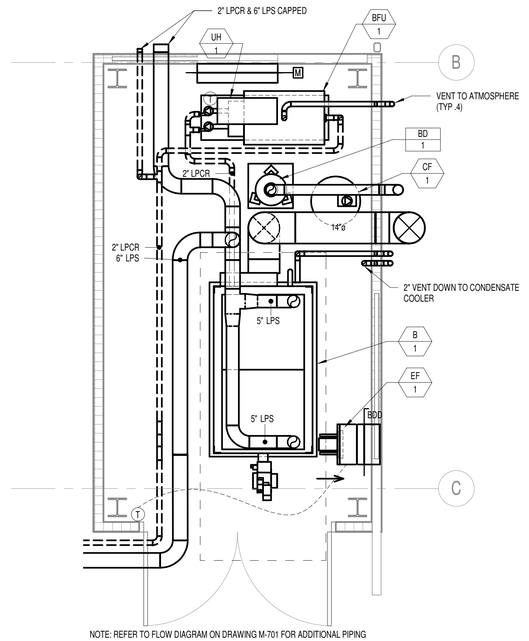
NORTH

MD100



B1 BASEMENT - NEW CONSTRUCTION PLAN

SCALE: 1/8" = 1'-0"



NOTE: REFER TO FLOW DIAGRAM ON DRAWING M-701 FOR ADDITIONAL PIPING REQUIREMENTS.

B7 BOILER ROOM PART PLAN

SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. REFER TO FLOW DIAGRAMS ON DRAWINGS M-701 & M-702 AND PART PLAN ON THIS DRAWING FOR EQUIPMENT PIPING REQUIREMENTS.
2. ALL PIPING WITHIN THE CITY HALL BUILDING TO BE INSTALLED DIRECTLY BELOW THE EXISTING CEILING. DO NOT RUN PIPES UNDER EXISTING LIGHT FIXTURES OR SMOKE DETECTORS. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND RE-INSTALL OF EXISTING CEILING TILES TO FACILITATE INSTALLATION OF PIPE HANGERS.

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SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA
02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG
△ = CLOUDED CHANGE

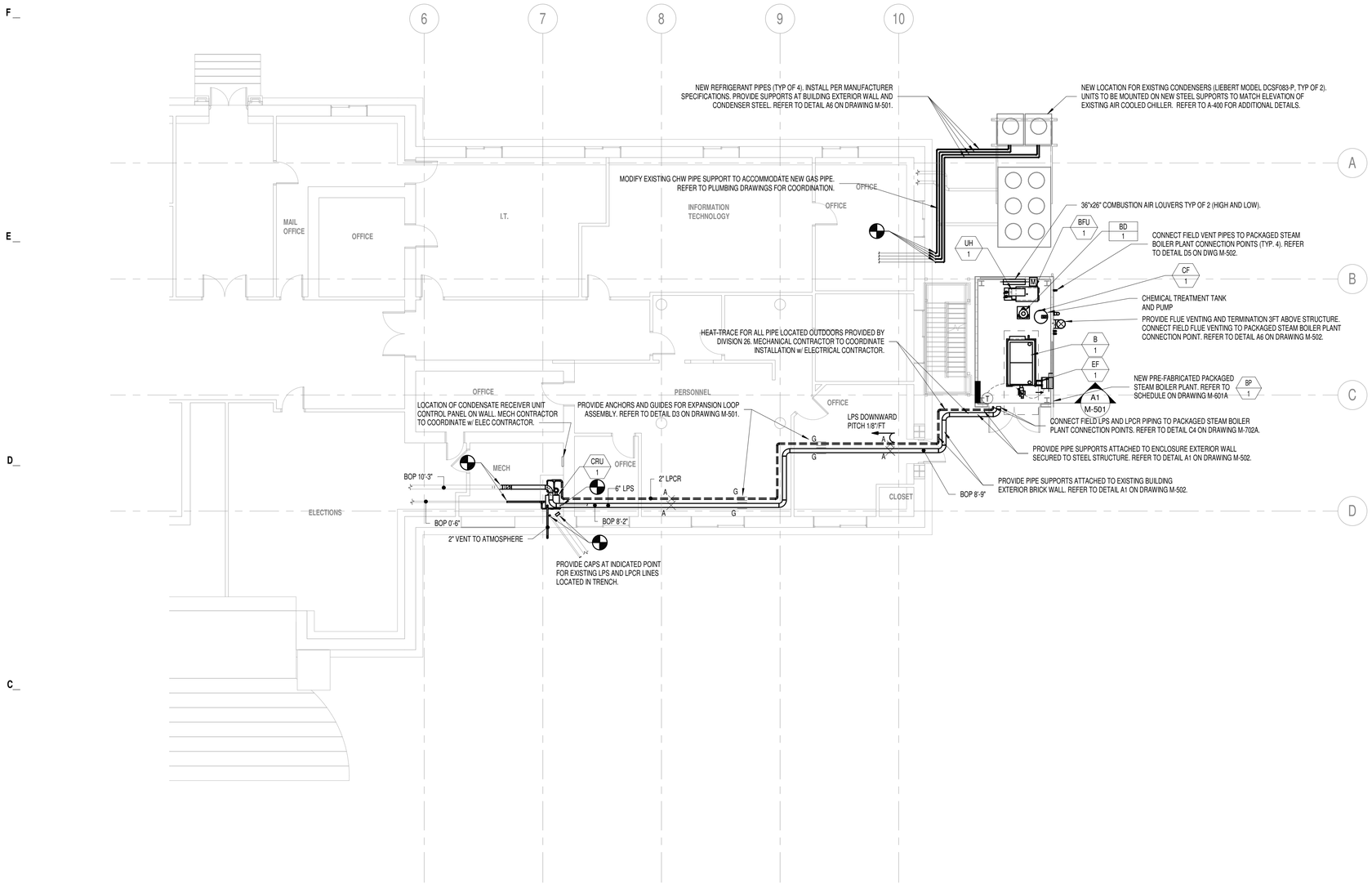
SCALE	As indicated
DRAWN BY	AHC / BDH
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

BASEMENT CONSTRUCTION PLAN

KEY PLAN

NORTH

M-100



A1 BASEMENT - NEW CONSTRUCTION PLAN - BID ALTERNATE 1

SCALE: 1/8" = 1'-0"

GENERAL NOTES - BID ALTERNATE 1

1. THE DEDUCT ALTERNATE SCOPE INCLUDES A PRE-FABRICATED PACKAGED STEAM BOILER PLANT FURNISHED AND INSTALLED UNDER DIVISION 23. REFER TO DIVISION 01 SPECIFICATIONS FOR ADDITIONAL DESCRIPTIONS OF THE BASE BID AND BID ALTERNATE 1. DRAWINGS M-100A, M-601A, M-701A, AND M-702A REFLECT THE BID ALTERNATE 1 SCOPE OF WORK. PLANS, SCHEDULES, AND DIAGRAMS SHOWN ON THESE SHEETS SHALL REPLACE DIAGRAMS SHOWN ON BASE BID DRAWINGS FOR THE ALTERNATE 1 BID ONLY.
2. THE PRE-FABRICATED PACKAGED STEAM BOILER PLANT SHALL BE FACTORY FABRICATED, PERFORMANCE TESTED AND DELIVERED TO SITE BY THE MANUFACTURER AS A COMPLETE UNIT CONTAINING ALL OF THE ITEMS SHOWN ON PLANS AND DESCRIBED IN SPECIFICATIONS. THE PRE-FABRICATED PACKAGED STEAM BOILER PLANT SHALL ONLY REQUIRE SUPPLY WATER CONNECTIONS, STEAM CONNECTIONS, CONDENSATE CONNECTION, ATMOSPHERE VENT CONNECTIONS, SANITARY CONNECTION, NATURAL GAS CONNECTION, AND ELECTRICAL POWER CONNECTION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. THE DESIGN INTENT OF THE PACKAGED PLANT SHALL BE BASED ON THE BASE BID SCOPE OF WORK FOR ALL DIVISIONS AND TRADES.
3. REFER TO FLOW DIAGRAMS ON DRAWINGS M-701A & M-702A FOR MECHANICAL EQUIPMENT PIPING REQUIREMENTS AND COORDINATION.
4. ALL PIPING WITHIN THE CITY HALL BUILDING TO BE INSTALLED DIRECTLY BELOW THE EXISTING CEILING. DO NOT RUN PIPES UNDER EXISTING LIGHT FIXTURES OR SMOKE DETECTORS. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND RE-INSTALL OF EXISTING CEILING TILES TO FACILITATE INSTALLATION OF PIPE HANGERS.

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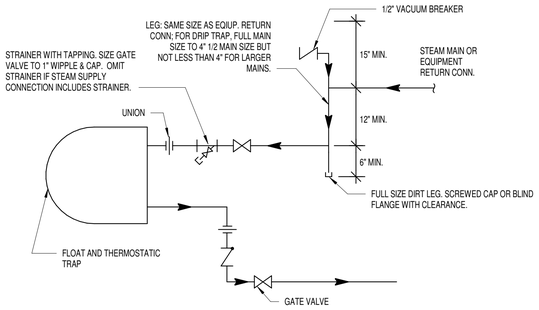
BASEMENT CONSTRUCTION PLAN -BID ALTERNATE 1

KEY PLAN

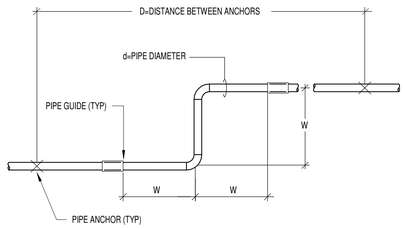
NORTH

M-100A



NOTES:
1. STEAM MAIN DRIP TRAP 3/4" UNLESS OTHERWISE NOTED.
2. OMIT CHECK VALVE FOR 15 PSIG STEAM PRESSURE OR LOWER WHEN CONDENSATE IS NOT LIFTED UP.
3. PROVIDE ELEVATED SUPPORTS AS REQUIRED FOR FLOOR-MOUNTED EQUIPMENT TO OBTAIN MINIMUM TRAP LEG HEIGHT AS SHOWN AND PITCH OF CONDENSATE RETURN TO TERMINATION.
4. INSTALL TRAP ASSEMBLIES IN PARALLEL WHEN MORE THAN ONE TRAP REQUIRED FOR LOAD.

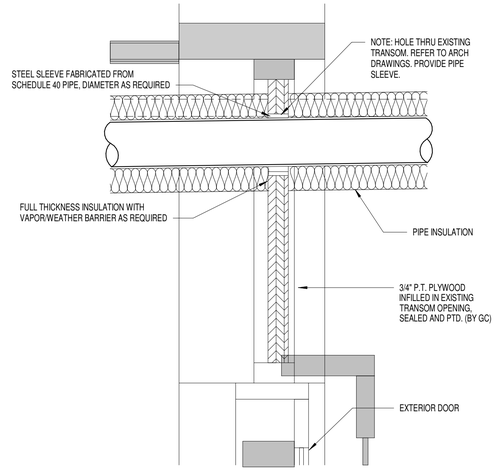
D1 FLOAT & THERMOSTATIC TRAP ASSEMBLY
SCALE: NTS



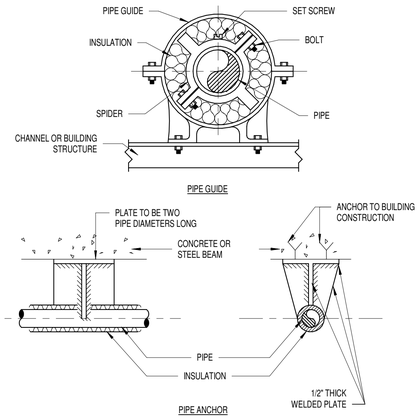
EXPANSION LOOP SCHEDULE			
SERVICE	MAX. TEMP.	DIAMETER	D = 30'-0" W
LPS	250°F	6"	8'-0"
LPCR	200°F	2" AND SMALLER	5'-0"

NOTES:
1. SEE SPECIFICATIONS FOR PIPING MATERIALS AND METHODS.
2. CONTRACTOR RESPONSIBLE FOR LOCATING AND SIZING AS REQUIRED BASED ON FIELD CONDITIONS.

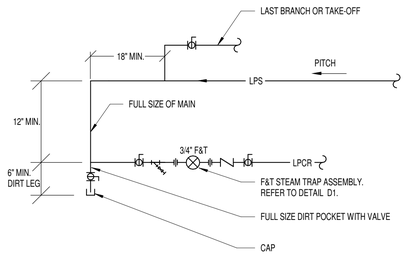
D3 EXPANSION LOOP
SCALE: NTS



D6 PIPE THROUGH TRANSOM PENETRATION
SCALE: NTS

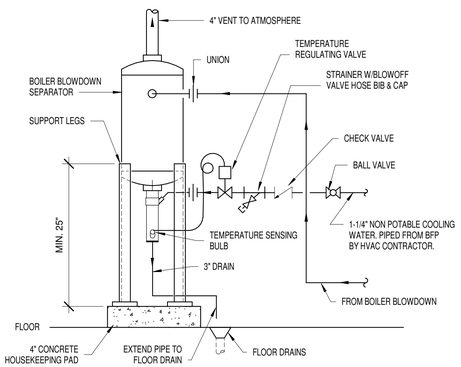


B1 PIPE ANCHOR AND GUIDE
SCALE: NTS

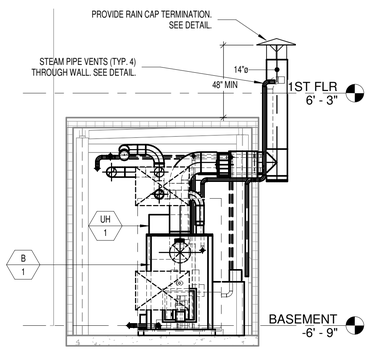


NOTES:
1. PROVIDE DOUBLE TRAP ARRANGEMENT WHERE SHOWN ON THE DRAWINGS, SPECIFICATIONS, OR WHERE REQUIRED BY CONDENSATE FLOW RATE.

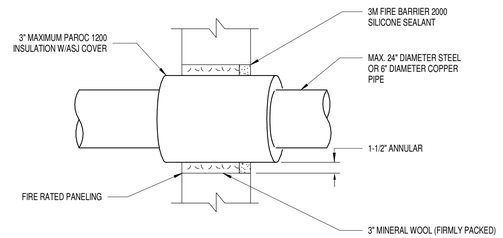
B3 LOW PRESSURE END-OF-MAIN STEAM TRAP
SCALE: NTS



B6 BLOWDOWN SEPARATOR & CONDENSATE COOLER
SCALE: NTS

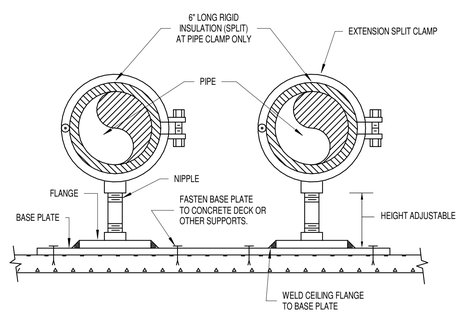


A1 BOILER ROOM SECTION
SCALE: 1/4" = 1'-0"



NOTES:
1. ASSEMBLY: MINIMUM 4-1/2" THICK WALL ASSEMBLY CONSTRUCTED OF ANY UL CLASSIFIED PANELING (WITH A FIRE RATING EQUAL TO OR GREATER THAN THE SYSTEM RATING).
2. PENETRATING ITEM(S): MAXIMUM 24" DIAMETER MINIMUM SCHEDULE 10 STEEL PIPE, OR MAXIMUM 4" MINIMUM SCHEDULE 5 STEEL PIPE, CONDUIT/ EMT OR MAXIMUM 6" DIAMETER TYPE L (OR HEAVIER) COPPER TUBING OR MAXIMUM 6" DIAMETER REGULAR (OR HEAVIER) COPPER PIPE COVERED WITH MAXIMUM 3" THICK MINERAL WOOL FOIL-SCRIM-KRAFT PIPE INSULATION. PIPE INSULATION TOP BE SECURED TO PIPE WITH MINIMUM 18 GAUGE STEEL TIE WIRE SPACED 12" ON CENTER. MINERAL WOOL PIPE INSULATION OS PAROC 1200 MANUFACTURED BY PARTEK INSULATIONS.
3. INSTALLATION NOTES:
   A. MINIMUM ANNULAR SPACE REQUIREMENT IS 1/2". MAXIMUM AMMULAR SPACE ALLOWABLE IS 1-1/2".
   B. FIRMLY PACK A MINIMUM OF 3" OF MINIMUM 4 PCF MINERAL WOOL INTO THE OPENING AND RECESS IT1/2" FROM EACH WALL SURFACE.
   C. INSTALL 1/2" OF 3M FIRE BARRIER 2000 SILICONE SEALANT ON BOTH SIDES OF MINERAL WOOL IN WALLS.

A3 PIPE THROUGH BOILER ENCLOSURE FIRE WALL
SCALE: NTS



A6 PIPE SUPPORT
SCALE: NTS

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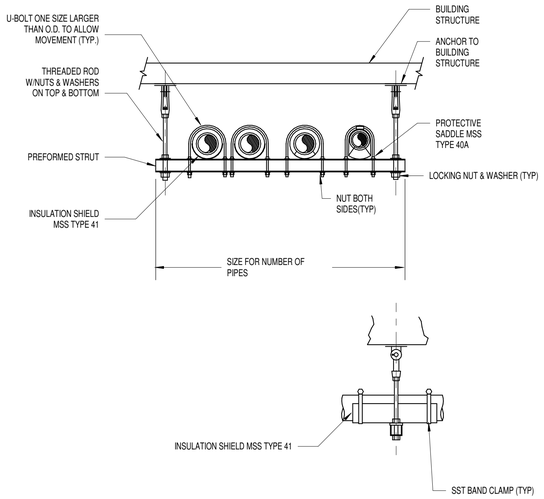
JOB NO.	17117

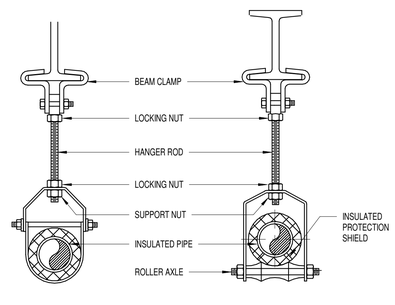
DETAIL SHEET 1

M-501



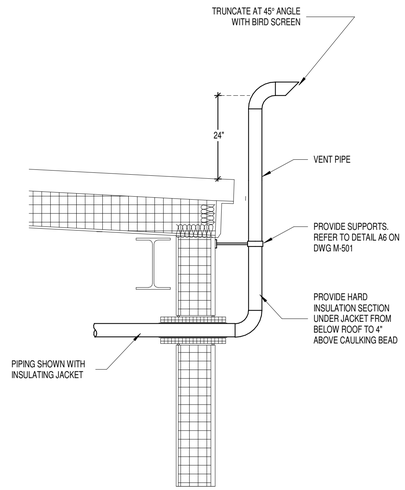
NOTES:
1. SIZE HANGER CLAMP TO ADEQUATELY SUPPORT LOAD
2. INSULATION SHIELDS - FOR COLD LINES AND PROTECTION SADDLES - FOR HOT LINES.

D1 MECHANICAL TRAPEZE PIPE HANGER
SCALE: NTS

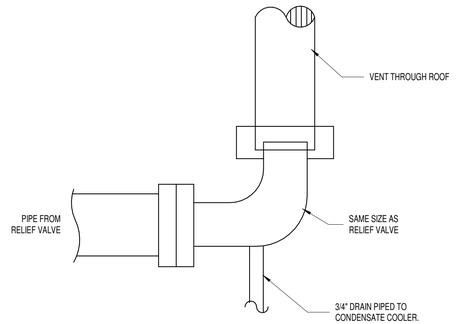


NOTES:
1. SIZE HANGER CLAMP TO ADEQUATELY SUPPORT LOAD.
2. REFER TO STRUCTURAL HANGING DETAILS FOR ATTACHMENTS.
3. IF INSULATED PIPE, SIZE HANGER PROPERLY. INSULATION SHIELDS FOR COLD LINES AND PROTECTION SADDLES FOR HOT LINES.
4. REFER TO SPECIFICATIONS FOR TYPE OF INSULATION PROTECTION SHIELD BASED ON PIPE SIZE.
5. REFER TO SMACNA SEISMIC RESTRAINT MANUAL FOR THREADED ROD AND SEISMIC RESTRAINT REQUIREMENTS.

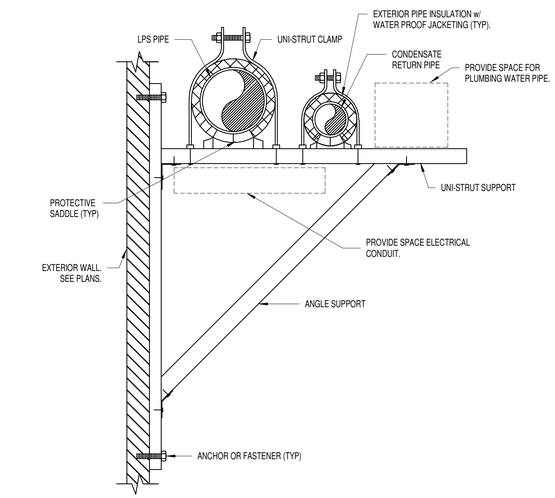
D3 PIPE HANGER
SCALE: NTS



D5 VENT PIPE THROUGH WALL
SCALE: 6" = 1'-0"



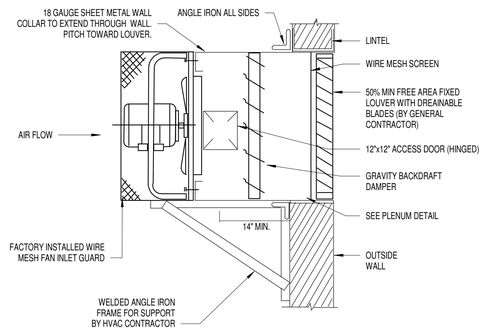
D6 DRIP PAN ELBOW
SCALE: NTS



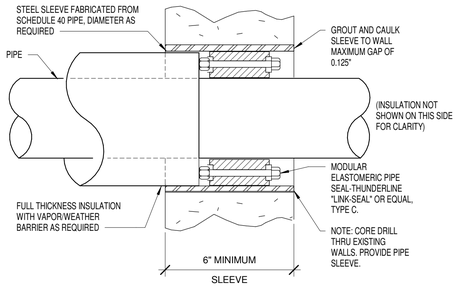
NOTES:

1. WALL BRACKET SUPPORT ASSEMBLIES TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2. MECHANICAL CONTRACTOR TO SIZE ALL SUPPORTS, ANCHORS, AND FASTENERS TO ADEQUATELY SUPPORT LOAD.
3. INSULATION SHIELDS - FOR COLD LINES AND PROTECTION SADDLES - FOR HOT LINES.
4. REFER TO SPECIFICATIONS FOR TYPE OF INSULATION PROTECTION SHIELD BASED ON PIPE SIZE.

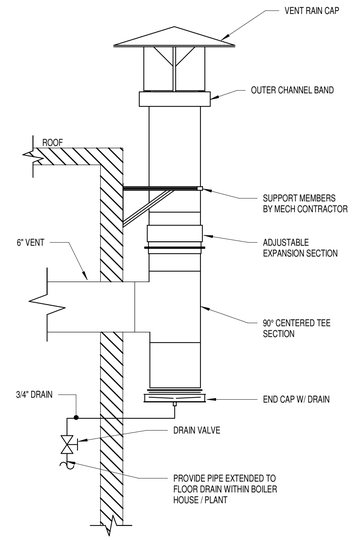
A1 WALL BRACKET PIPE SUPPORT
SCALE: NTS



A3 SIDEWALL PROPELLER FAN
SCALE: NTS



A5 PIPE THROUGH MECH ROOM WALL PENETRATION
SCALE: NTS



NOTES:
1. TERMINATE VENT AT LEAST 3'-0" ABOVE ANY FORCED AIR INLET LOCATED WITHIN 10'-0".
2. WHEN VENT TERMINATION IS LOCATED BELOW AN ADJACENT ROOF STRUCTURE. THE TERMINATION SHALL BE LOCATED AT LEAST 3'-0" FROM SUCH STRUCTURE.
3. THE VENT TERMINATION SHALL BE LOCATED AT LEAST 3'-0" HORIZONTALLY FROM ANY PORTION OF THE ROOF STRUCTURE.
4. FOLLOW FLUE MANUFACTURERS RECOMMENDATIONS FOR SUPPORTS.
5. ALL FLUE FITTINGS BY FLUE MANUFACTURER.

A7 BOILER FLUE
SCALE: NTS

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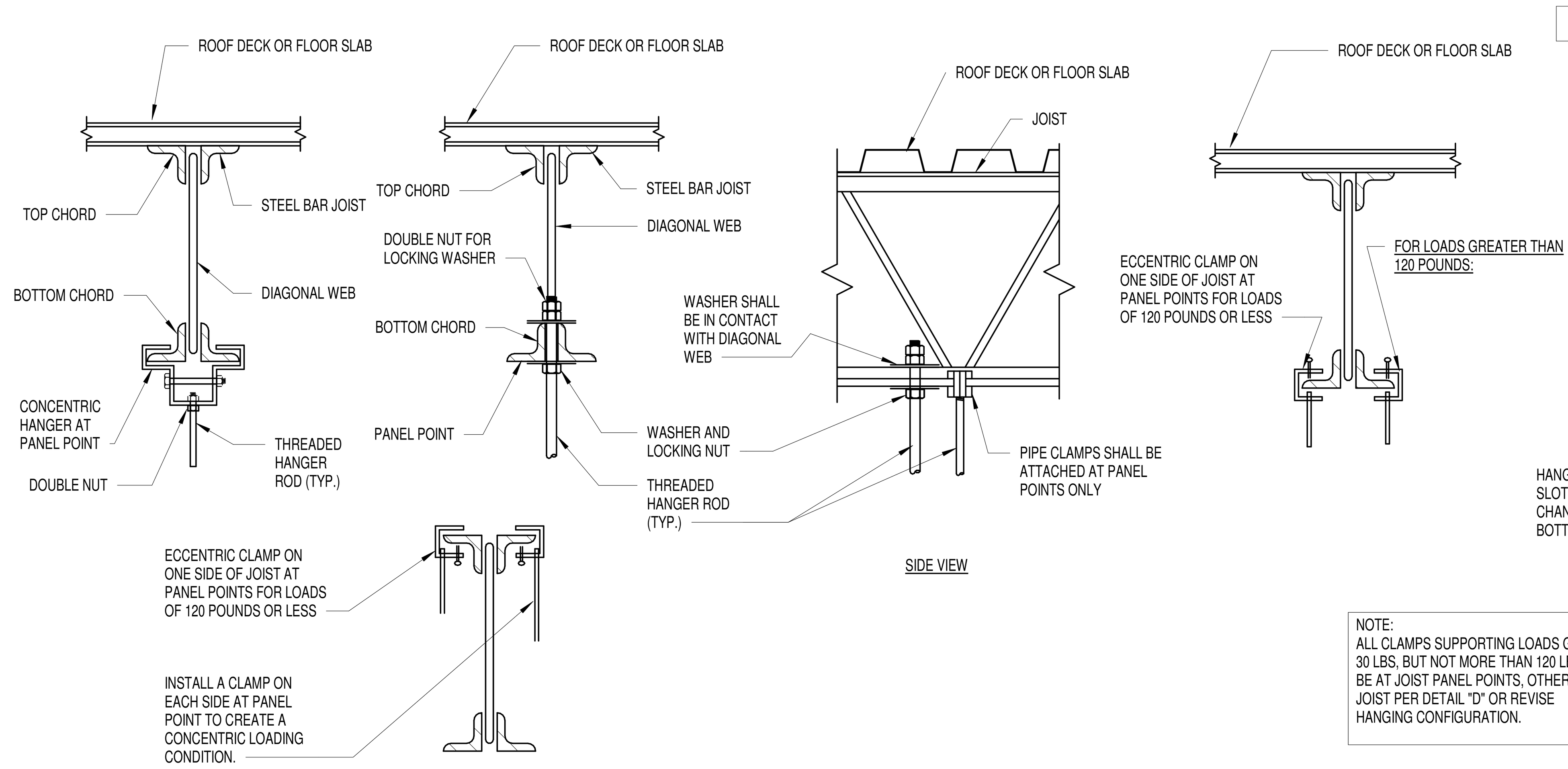
JOB NO.	17117

DETAIL SHEET 2

M-502

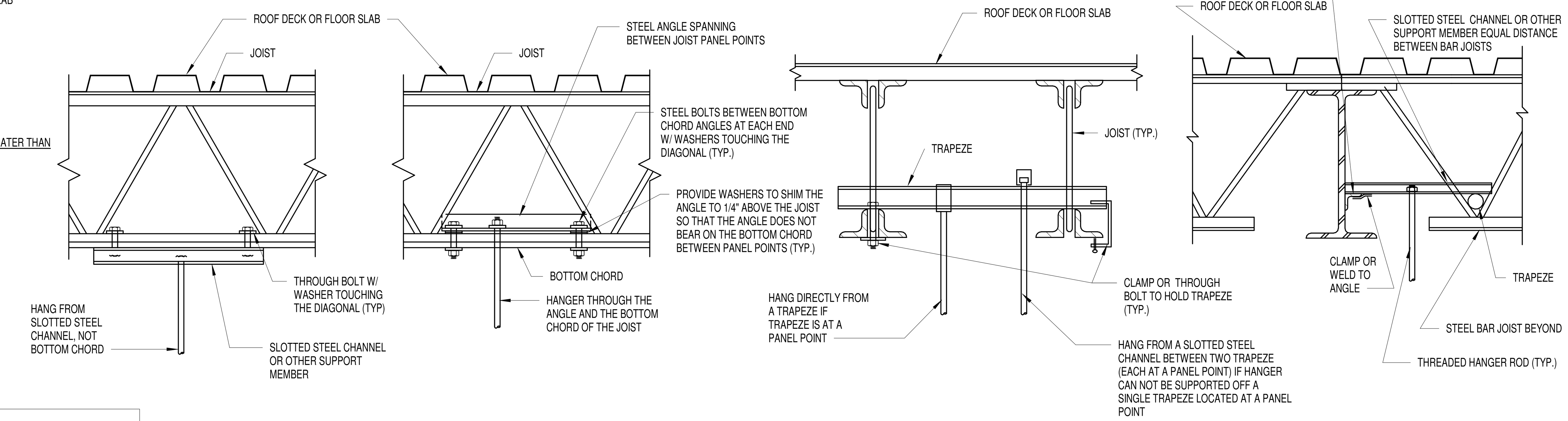


NOTE:
ALL CLAMPS SUPPORTING LOADS GREATER THAN 30 LBS, BUT NOT MORE THAN 120 LBS, MUST BE AT JOIST PANEL POINTS, OTHERWISE REINFORCE JOIST PER DETAIL "D" OR REVISE HANGING CONFIGURATION.

DETAIL "A" CONCENTRIC (AND ECCENTRIC) HANGERS

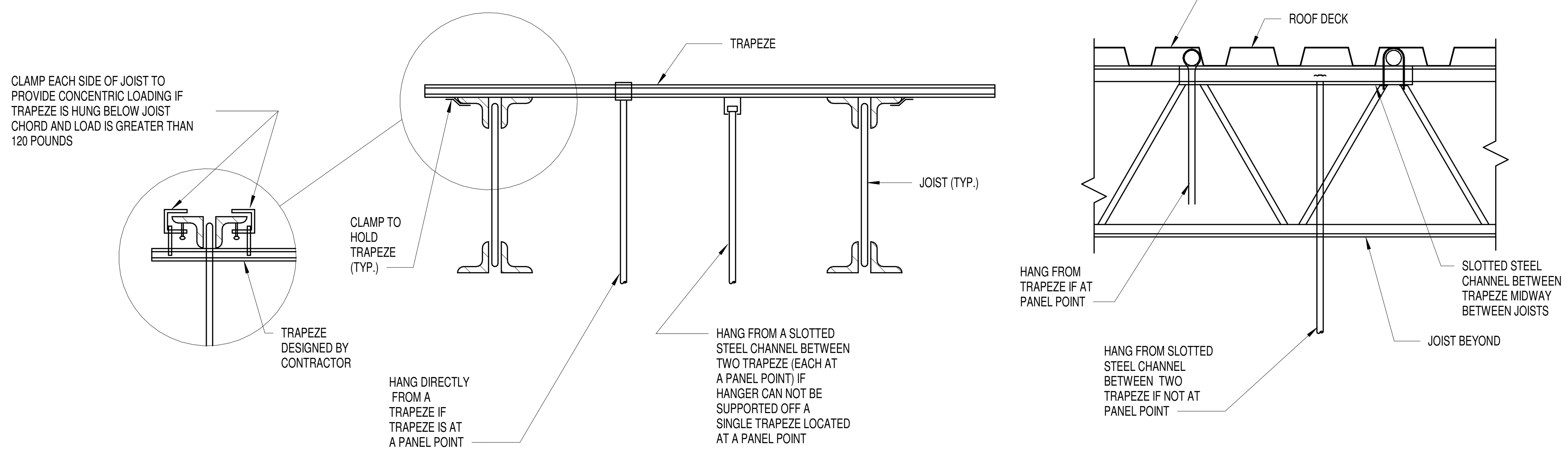
(ECCENTRIC HANGERS ONLY ALLOWED FOR LOADS OF 120 POUNDS OR LESS)

NOTE: ROOF DECK OMITTED FOR CLARITY.



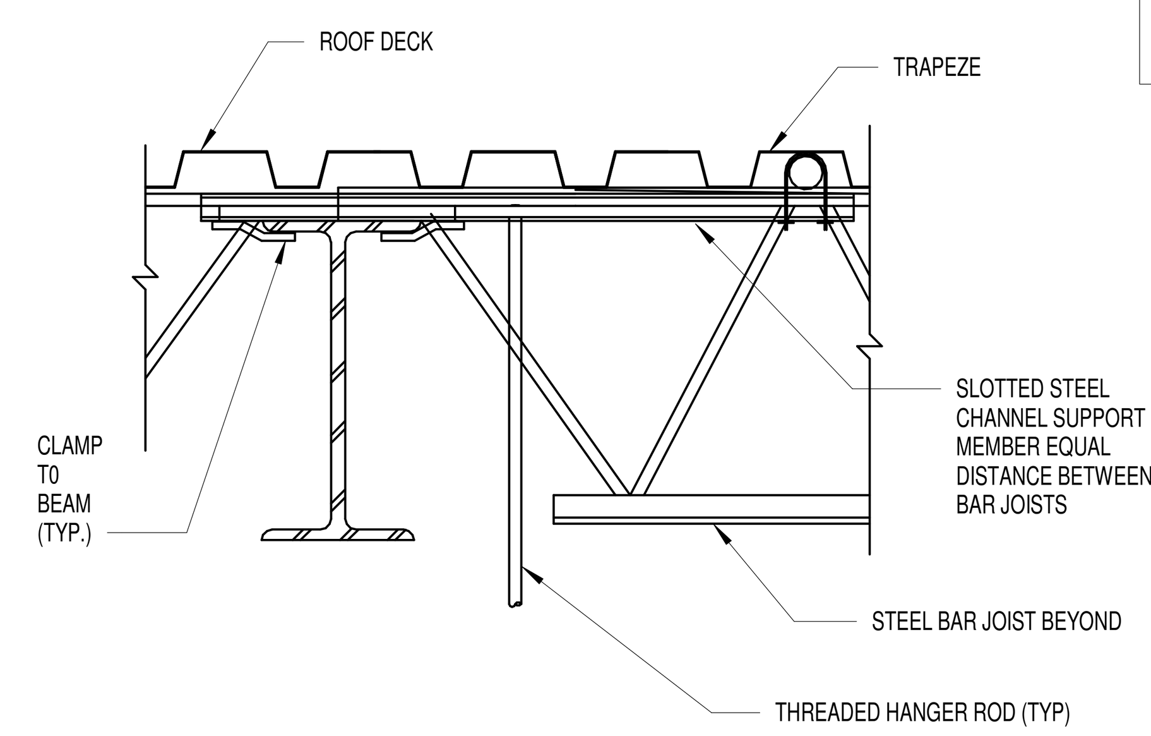
DETAIL "B" HANGING FROM BOTTOM CHORD

NOTE: ROOF DECK OMITTED FOR CLARITY.



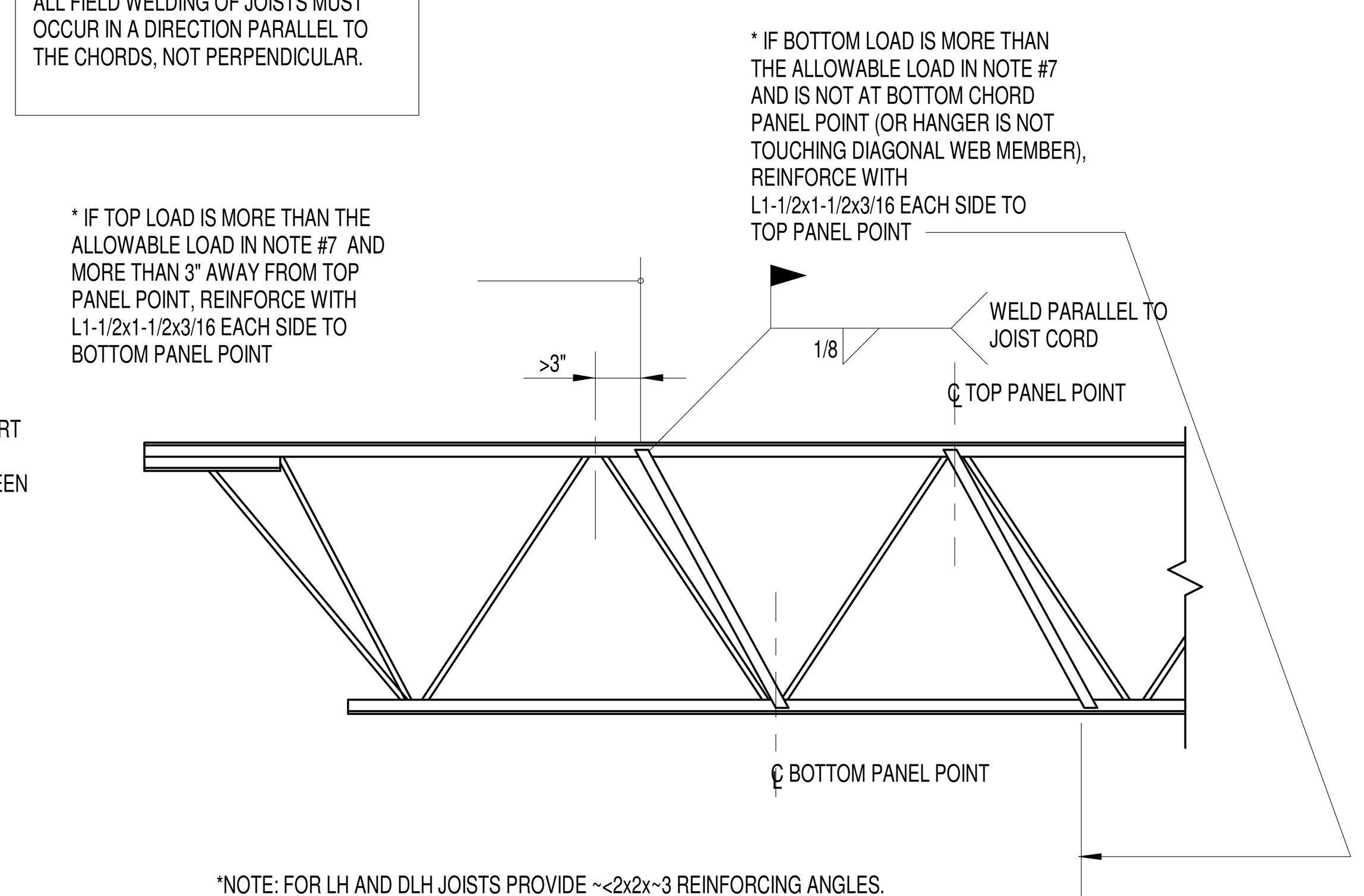
DETAIL "C" HANGING FROM TOP CHORD

(APPLICABLE AT LOCATIONS WITH 1-1/2" MIN DEEP ROOF DECK)



JOIST HANGING

NOTE:
ALL FIELD WELDING OF JOISTS MUST OCCUR IN A DIRECTION PARALLEL TO THE CHORDS, NOT PERPENDICULAR.



*NOTE: FOR LH AND DLH JOISTS PROVIDE ~<2x2x~3 REINFORCING ANGLES.

DETAIL "D" TYPICAL JOIST REINFORCING

(FOR LOADS NOT AT PANEL POINTS)

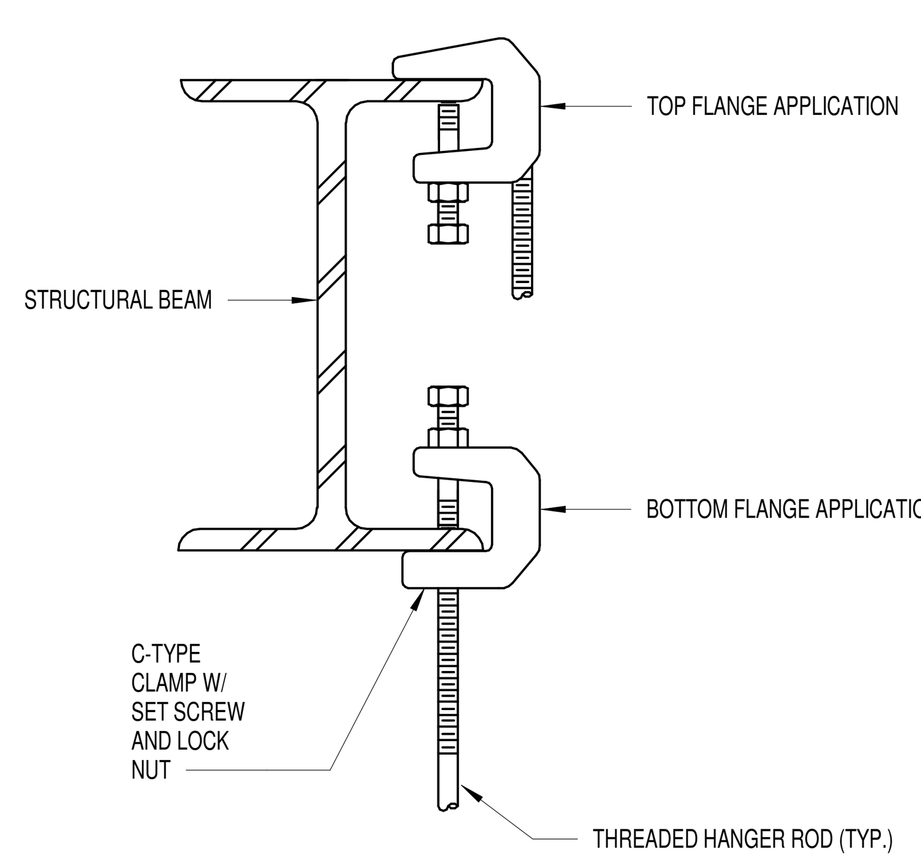
JOIST HANGING NOTES:
1. DO NOT HANG PIPES AND EQUIPMENT FROM STEEL DECK OR FROM BRIDGING ANGLES.
2. WHERE POSSIBLE SUSPEND HANGERS FROM WIDE-FLANGED BEAMS, NOT FROM BAR JOISTS.
3. UTILITIES, INCLUDING PIPING, DUCTWORK AND CONDUIT RUNNING PARALLEL TO BAR JOISTS, WHERE THE LOAD IS 25 POUNDS PER LINEAR FOOT OR LESS, MAY BE HUNG FROM A SINGLE JOIST.
4. UTILITIES, INCLUDING PIPING, DUCTWORK AND CONDUIT, RUNNING PARALLEL TO BAR JOISTS, WHERE THE LOAD IS GREATER THAN 25 POUNDS PER LINEAR FOOT, SHALL BE SUPPORTED MID-WAY BETWEEN TWO JOISTS.
5. WHERE PAIRS OF PIPES RUN PERPENDICULAR TO BAR JOISTS, STAGGER HANGERS BETWEEN ALTERNATE JOISTS, OR HANG FROM EVERY JOIST.
6. THE TOTAL WEIGHT OF ALL UTILITIES, SERVICES, PIPING, DUCTWORK AND CONDUIT HANGING FROM A SINGLE POINT SHALL NOT EXCEED 200 LBS FOR K-SERIES JOISTS AND 400 LBS FOR LH AND DLH SERIES JOISTS UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS. WHEN THIS WEIGHT IS EXCEEDED, SUBMIT A DETAIL OF PROPOSED METHOD OF HANGING TO THE ARCHITECT FOR APPROVAL.
7. HANGERS MAY BE LOCATED BETWEEN PANEL POINTS PROVIDED THAT THEY DO NOT EXCEED THE FOLLOWING LOADS:

	K-SERIES JOISTS	LH & DLH- SERIES JOISTS
BETWEEN TOP CHORD PANEL POINTS	100 LBS	200 LBS
BETWEEN BOTTOM CHORD PANEL POINTS	50 LBS	100 LBS

8. ECCENTRIC HANGERS (C-CLAMPS) WILL BE ALLOWED FOR PIPING AND OTHER TRADES WHERE THE HANGER SPACING LIMITS THE TOTAL POINT LOAD TO 120 LBS OR LESS. C-CLAMPS FOR LOADS GREATER THAN 30 LBS, BUT NOT MORE THAN 120 LBS, MUST BE LOCATED AT JOIST PANEL POINTS UNLESS THE JOIST CHORD IS REINFORCED WITH AN ANGLE SIMILAR TO DETAIL "D".
9. WELDING OF JOISTS SHALL ONLY BE IN A DIRECTION PARALLEL TO JOIST CHORDS.

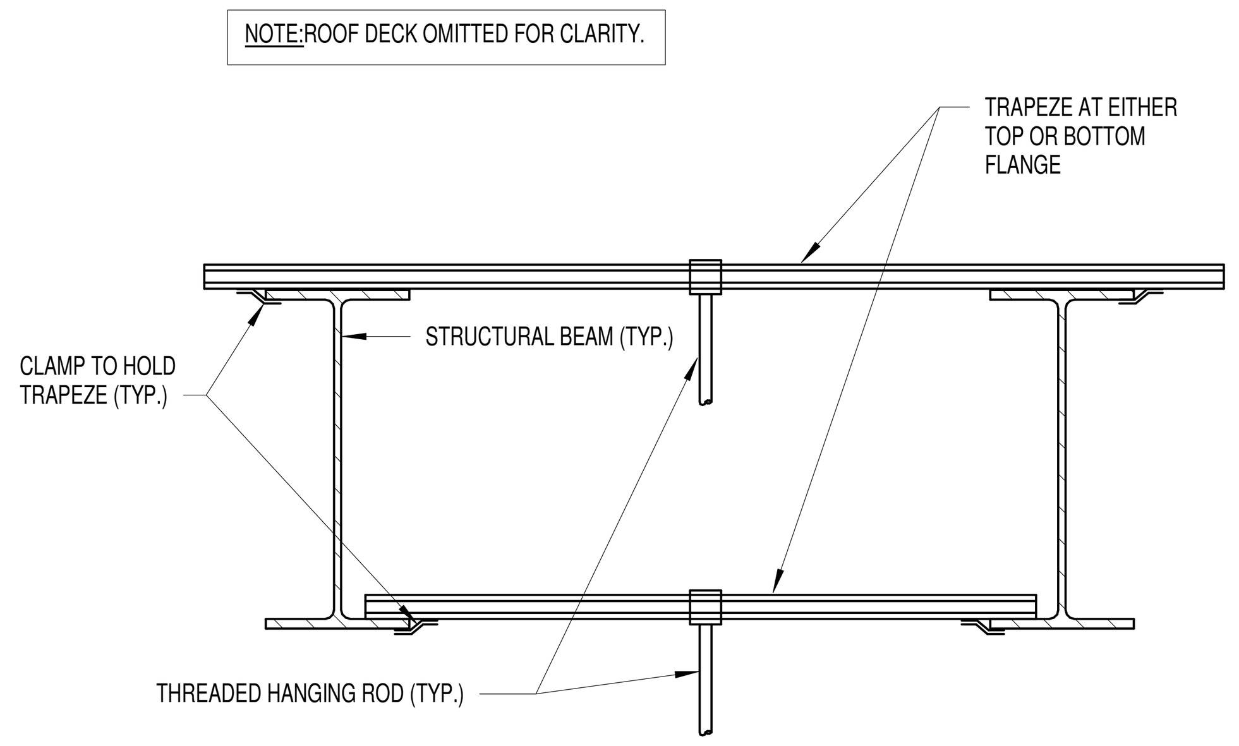
GENERAL NOTES:

1. COORDINATE HANGING LOCATIONS AND DETAILS WITH OTHER TRADES: ATTEND A PRE-INSTALLATION CONFERENCE WITH GENERAL CONTRACTOR, ARCHITECT AND OTHER TRADES TO REVIEW HANGING METHODS AND COORDINATE HANGING LOCATIONS.
2. DO NOT HANG FROM ROOF DECK.
3. SUBMIT ALTERNATE METHODS FOR HANGING TO ARCHITECT FOR REVIEW AND DO NOT USE WITHOUT WRITTEN APPROVAL FROM ARCHITECT.
4. SEE SPECIFICATIONS FOR SEISMIC BRACING REQUIREMENTS.

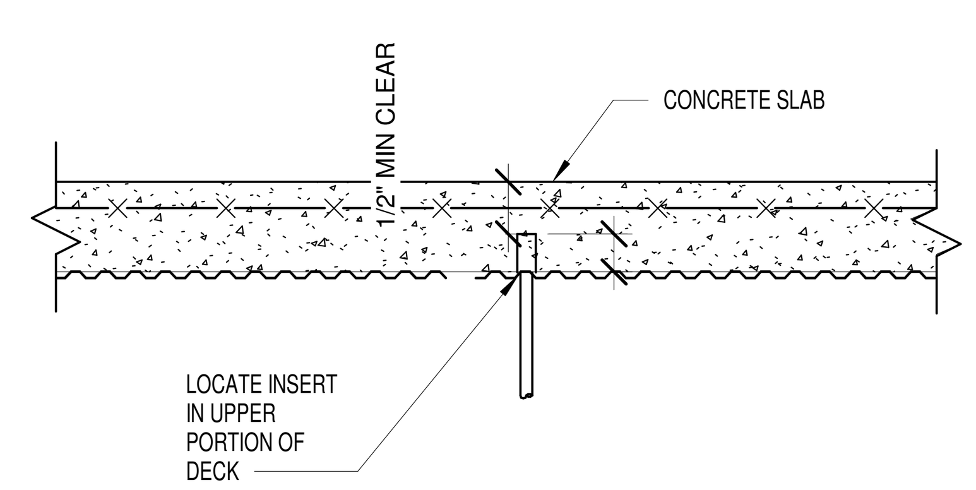


FOR PIPING ø10" AND SMALLER

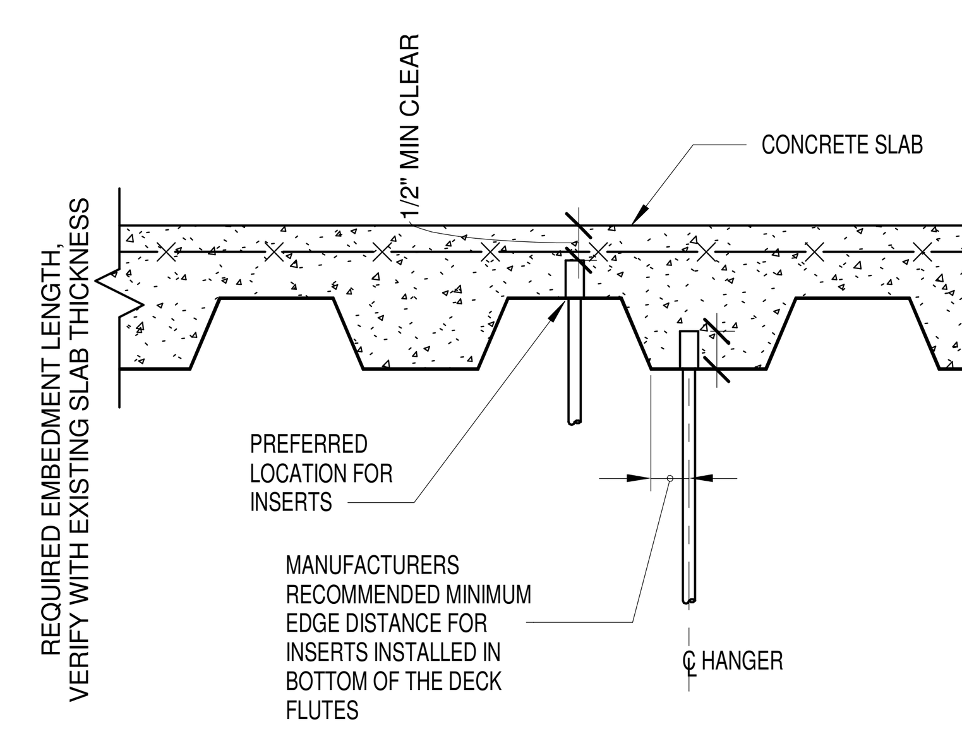
NOTE:ROOF DECK OMITTED FOR CLARITY.



BEAM HANGING

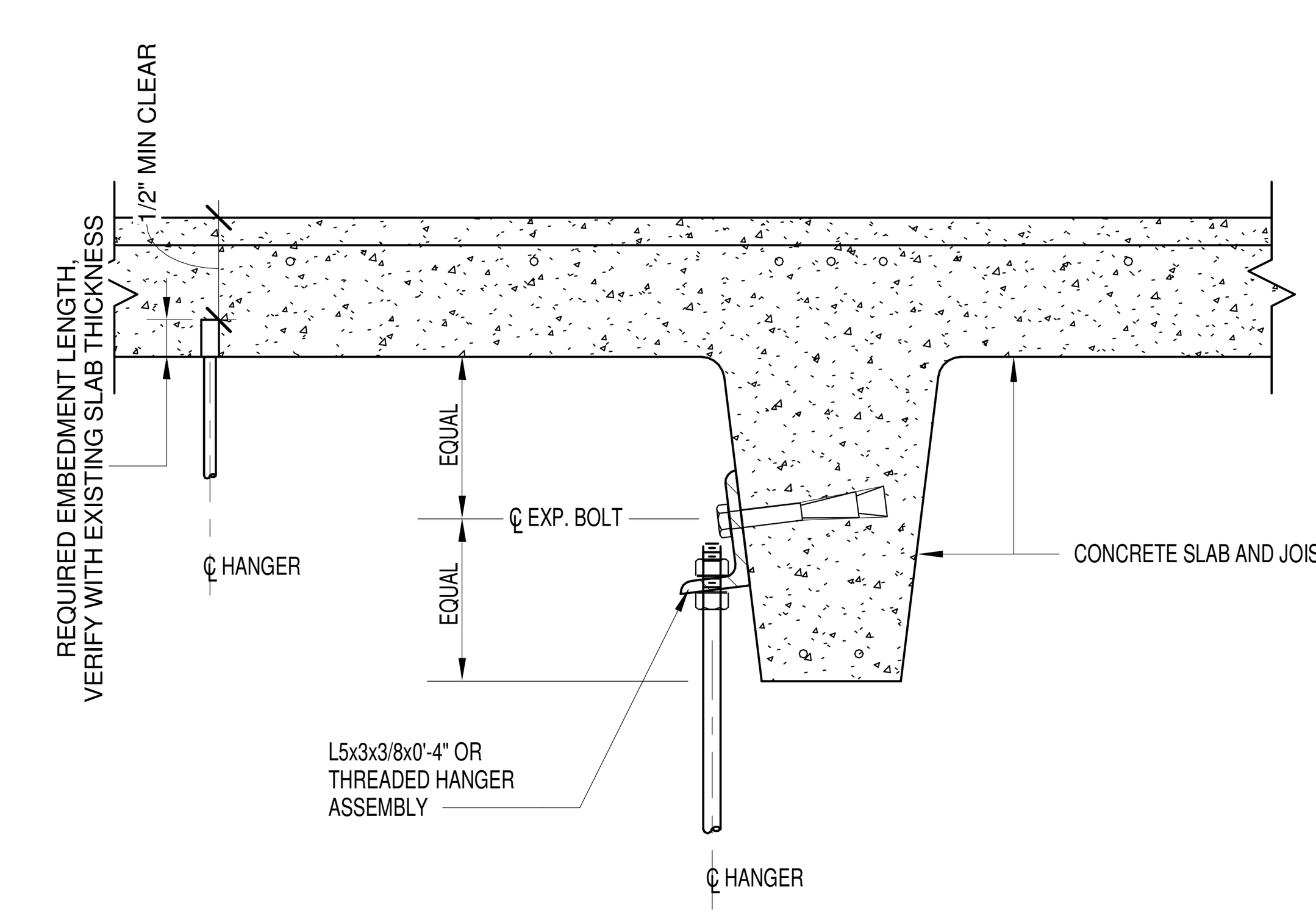


SLABS ON FORM DECK



SLABS ON COMPOSITE DECK

FOR PIPING ø6" AND SMALLER FLOOR HANGING



FORMED SLAB

A1 STRUCTURAL DETAILS
SCALE: NTS

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MUNICIPAL FREEDOM GIVES NATIONAL STRENGTH · TOWN 1842 · 1872 CITY · OLD POWDER HOUSE · HONORABLY PURCHASED FROM PAWTUCKETS · 1639 · SOMERVILLE, MASS.

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PROJ. MRG.	LBF
JOB NO.	17117

DETAIL SHEET 3

M-503

SMMA

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STEAM BOILER

EQUIPMENT NAME	SERVICE/ LOCATION	INPUT (MBH)	OUTPUT (MBH)	MINIMUM EFFICIENCY (%)	BOILER HP	STEAM DATA		NATURAL GAS FUEL		ELECTRICAL			EMERGENCY POWER (Y/N)	OPERATING WEIGHT (LBS)	BASIS OF DESIGN		REMARKS
						LB/HR	PSI	MINIMUM INLET PRESSURE (MIN/MAX IN WG)	INPUT (CFH)	V	Φ	HZ			MANUFACTURER	MODEL	
B-1	CITY HALL BLDG / MECH ENCLOSURE	2737	2274	83.0	67.9	2380	7	6.4 / 14	2737	208	1	60	Y	5600	Weil-McLain	988	NOTE(S) 1,2,3,4

NOTES:
1. PROVIDE WITH POWER FLAME GAS BURNER MODEL: WCR2-G-20B
2. INCLUDE ALL GAS TRAIN OPTIONS AND ACCESSORIES NECESSARY FOR LOW-HIGH-OFF OPERATION.
3. PROVIDE MANUFACTURERS BOILER CONTROL PANEL (BCP), MODEL BMC.
4. PROVIDE WITH SPIRAX SARCO AUTOMATIC TOP BLOWDOWN CONTROL SYSTEM.

DUPLEX BOILER FEED UNIT

EQUIPMENT NAME	SERVICE/ LOCATION	TANK CAPACITY (GAL)	NO. OF PUMPS	GPM (EACH)	NPSH REQ'D (FT)	DISCHARGE PRESSURE	ELECTRICAL					VFD (Y/N)	EMERGENCY POWER (Y/N)	BASIS OF DESIGN		REMARKS
							HP	RPM	V	Φ	HZ			MANUFACTURER	MODEL	
BFU-1	CITY HALL BLDG / MECH ENCLOSURE	71	2	15	2.0	30.0	0.75	3450	208	3	60	N	Y	SPIRAX SARCO	VJS-103	NOTE(S) 1,2

NOTES:
1. PROVIDE CONTROL PANEL.
2. BOILER FEED UNIT TO BE FABRICATED AS A COMPLETE SKID MOUNTED PACKAGE.

BLOW DOWN SEPARATOR

EQUIPMENT NAME	SERVICE/ LOCATION	TANK SIZE (IN)		DRAIN TO FLOOR HEIGHT (IN)	INLET SIZE (IN)	DRAIN SIZE (IN)	VENT SIZE (IN)	BASIS OF DESIGN		REMARKS
		DIAMETER	LENGTH					MANUFACTURER	MODEL	
BD-1	CITY HALL BLDG / MECH ENCLOSURE	14	20.00	24	2.00	4	5	CLEAVER BROOKS	A20B	NOTE(S) 1,2

NOTES:
1. PROVIDE AFTER COOLER MODEL 18DF W/ AUTOMATIC COOLING VALVE ASSEMBLY AND 1-1/4" COLD WATER INLET CONNECTION.
2. PROVIDE FLOOR STAND.

ELECTRIC UNIT HEATER

EQUIPMENT NAME	SERVICE/ LOCATION	AIRFLOW	HEATING CAPACITY		ELECTRICAL			OPERATING WEIGHT	BASIS OF DESIGN		REMARKS
			KW	MBH	V	Ø	HZ		MANUFACTURER	MODEL	
UH-1	MECH ENCLOSURE	910	15	41.2	208	3	60	60	QMARK	MUH-20-2	NOTE(S) 1

NOTES:
1. PROVIDE UNIT MOUNTED THERMOSTAT.

FAN

EQUIPMENT NAME	SERVICE/ LOCATION	AIRFLOW (CFM)	ESP (IN WG)	ELECTRICAL						TYPE	DRIVE	WALL OPENING (IN)	VFD (Y/N)	EMERGENCY POWER (Y/N)	OPERATING WEIGHT	BASIS OF DESIGN		REMARKS
				BHP	HP	FRPM	V	Ø	HZ							MANUFACTURER	MODEL	
EF-1	MECH ENCLOSURE	300	0.125	0.02	0.25	778	115	1	60	SIDEWALL	DIRECT	15x15	N	Y	60	GREENHECK	SE1-12-432-VG	NOTE(S) 1,2

NOTES:
1. PROVIDE NON-FUSED DISCONNECT SWITCH.
2. PROVIDE LINE VOLTAGE THERMOSTAT CONTROL.

CHEMICAL FEED SYSTEM

EQUIPMENT NAME	SERVICE/ LOCATION	TANK SIZE (GAL)	MAX WORKING PRESSURE (PSIG)	PUMP MOTOR DATA							BASIS OF DESIGN		REMARKS
				HP	V	Φ	HZ	VFD (Y/N)	EMERGENCY POWER (Y/N)	OPERATING WEIGHT (LBS)	MANUFACTURER	MODEL	
CF-1	CITY HALL BLDG / MECH ENCLOSURE	35	150	0.03	115	1	60	N	Y	10	BARCLAY	--	NOTE(S) 1,2

NOTES:
1. PROVIDE ALL CONTROLS FOR A FULLY FUNCTIONAL SYSTEM.
2. PROVIDE INJECTION QUILL.

CONDENSATE RETURN UNIT

EQUIPMENT NAME	SERVICE/ LOCATION	TANK CAPACITY (GAL)	NO. OF PUMPS	GPM (EACH)	NPSH REQ'D (FT)	DISCHARGE PRESSURE (PSIG)	ELECTRICAL					VFD (Y/N)	EMERGENCY POWER (Y/N)	BASIS OF DESIGN		REMARKS
							HP	RPM	V	Φ	HZ			MANUFACTURER	MODEL	
CRU-1	CITY HALL BLDG / CITY HALL MECH ROOM	15	2	15	2.0	30	0.75	3450	208	3	60	N	Y	SPIRAX SARCO	VJS-103	NOTE(S) 1,2

NOTES:
1. PROVIDE WALL MOUNTED CONTROL PANEL AS INDICATED ON PLANS.
2. CONDENSATE RETURN UNIT TO BE FABRICATED AS A COMPLETE SKID MOUNTED PACKAGE.
3. INCLUDE FACTORY ISOLATION VALVES.

SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA 02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG

△ = CLOUDED CHANGE

SCALE	
DRAWN BY	AHC
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

SCHEDULE SHEET

M-601

BP
1

PRE-FABRICATED PACKAGED STEAM BOILER PLANT

STEAM BOILER - PACKAGED BOILER PLANT

EQUIPMENT NAME	SERVICE/ LOCATION	INPUT (MBH)	OUTPUT (MBH)	MINIMUM EFFICIENCY (%)	BOILER HP	STEAM DATA		NATURAL GAS FUEL		ELECTRICAL			EMERGENCY POWER (Y/N)	OPERATING WEIGHT (LBS)	BASIS OF DESIGN		REMARKS
						LB/HR	PSI	MINIMUM INLET PRESSURE (MIN/MAX IN WG)	INPUT (CFH)	V	Φ	HZ			MANUFACTURER	MODEL	
B-1	CITY HALL BLDG / MECH ENCLOSURE	2737	2274	83.0	67.9	2380	7	6.4 / 14	2737	208	1	60	Y	5600	Weil-McLain	988	NOTE(S) 1,2,3,4

NOTES:
1. PROVIDE WITH POWER FLAME GAS BURNER MODEL: WCR2-G-20B
2. INCLUDE ALL GAS TRAIN OPTIONS AND ACCESSORIES NECESSARY FOR LOW-HIGH-OFF OPERATION.
3. PROVIDE MANUFACTURERS BOILER CONTROL PANEL (BCP), MODEL BMC.
4. PROVIDE WITH SPIRAX SARCO AUTOMATIC TOP BLOWDOWN CONTROL SYSTEM.
5.

DUPLEX BOILER FEED UNIT - PACKAGED BOILER PLANT

EQUIPMENT NAME	SERVICE/ LOCATION	TANK CAPACITY (GAL)	NO. OF PUMPS	GPM (EACH)	NPSH REQ'D (FT)	DISCHARGE PRESSURE	ELECTRICAL					VFD (Y/N)	EMERGENCY POWER (Y/N)	BASIS OF DESIGN		REMARKS
							HP	RPM	V	Φ	HZ			MANUFACTURER	MODEL	
BFU-1	CITY HALL BLDG / MECH ENCLOSURE	71	2	15	2.0	30.0	0.75	3450	208	3	60	N	Y	SPIRAX SARCO	VJS-103	NOTE(S) 1,2

NOTES:
1. PROVIDE CONTROL PANEL.
2. BOILER FEED UNIT TO BE FABRICATED AS A COMPLETE SKID MOUNTED PACKAGE.

BLOW DOWN SEPARATOR - PACKAGED BOILER PLANT

EQUIPMENT NAME	SERVICE/ LOCATION	TANK SIZE (IN)		DRAIN TO FLOOR HEIGHT (IN)	INLET SIZE (IN)	DRAIN SIZE (IN)	VENT SIZE (IN)	BASIS OF DESIGN		REMARKS
		DIAMETER	LENGTH					MANUFACTURER	MODEL	
BD-1	CITY HALL BLDG / MECH ENCLOSURE	14	20.00	24	2.00	4	5	CLEAVER BROOKS	A20B	NOTE(S) 1,2

NOTES:
1. PROVIDE AFTER COOLER MODEL 18DF W/ AUTOMATIC COOLING VALVE ASSEMBLY AND 1-1/4" COLD WATER INLET.
2. PROVIDE FLOOR STAND.

ELECTRIC UNIT HEATER - PACKAGED BOILER PLANT

EQUIPMENT NAME	SERVICE/ LOCATION	AIRFLOW	HEATING CAPACITY		ELECTRICAL			OPERATING WEIGHT	BASIS OF DESIGN		REMARKS
			KW	MBH	V	Ø	HZ		MANUFACTURER	MODEL	
UH-1	MECH ENCLOSURE	910	15	41.2	208	3	60	60	QMARK	MUH-20-2	NOTE(S) 1

NOTES:
1. PROVIDE UNIT MOUNTED THERMOSTAT.

FAN - PACKAGED BOILER PLANT

EQUIPMENT NAME	SERVICE/ LOCATION	AIRFLOW (CFM)	ESP (IN WG)	ELECTRICAL						TYPE	DRIVE	WALL OPENING (IN)	VFD (Y/N)	EMERGENCY POWER (Y/N)	OPERATING WEIGHT	BASIS OF DESIGN		REMARKS
				BHP	HP	FRPM	V	Ø	HZ							MANUFACTURER	MODEL	
EF-1	MECH ENCLOSURE	300	0.125	0.02	0.25	778	115	1	60	SIDEWAL L	DIRECT	15x15	N	Y	60	GREENHECK	SE1-12-432-VG	NOTE(S) 1,2

NOTES:
1. PROVIDE NON-FUSED DISCONNECT SWITCH.
2. PROVIDE LINE VOLTAGE THERMOSTAT CONTROL.

CHEMICAL FEED SYSTEM - PACKAGED BOILER PLANT

EQUIPMENT NAME	SERVICE/ LOCATION	TANK SIZE (GAL)	MAX WORKING PRESSURE (PSIG)	PUMP MOTOR DATA							BASIS OF DESIGN		REMARKS
				HP	V	Φ	HZ	VFD (Y/N)	EMERGENCY POWER (Y/N)	OPERATING WEIGHT (LBS)	MANUFACTURER	MODEL	
CF-1	CITY HALL BLDG / MECH ENCLOSURE	35	150	0.03	115	1	60	N	Y	10	BARCLAY	--	NOTE(S) 1,2

NOTES:
1. PROVIDE ALL CONTROLS FOR A FULLY FUNCTIONAL SYSTEM.
2. PROVIDE INJECTION QUILL.

NOTES:
1. PROVIDE 1 HOUR FIRE RATING FOR WALLS, ROOF, AND DOORS AS SHOWN AND SPECIFIED ON ARCHITECTURAL DRAWINGS.
2. PROVIDE ALL ELECTRICAL COMPONENTS, LIGHTING, FIRE ALARM DEVICES, AND WIRING WITH SINGLE POINT POWER CONNECTIONS AS INDICATED ON ELECTRICAL DRAWINGS.
3. PROVIDE ALL PLUMBING COMPONENTS, DRAINS, AND PIPING AS INDICATED ON PLUMBING DRAWINGS.
4. PROVIDE AN INTEGRAL PLC BASED CONTROLS AND NOTIFACT CELLULAR MONITORING SYSTEM FOR THE PLANT.
5. REFER TO SPECIFICATIONS FOR ACCEPTABLE PRE-FABRICATED PACKAGED STEAM BOILER MANUFACTURERS.
6. ALL SCHEDULED EQUIPMENT SHOWN WITH BP-1 OUTLINE TO BE PROVIDED BY PACKAGED PLANT MANUFACTURER. BASIS OF DESIGN EQUIPMENT LOCATED WITHIN PACKAGED PLANT MAY BE SUBSTITUTED PER ACCEPTABLE MANUFACTURERS LISTED IN SPECIFICATIONS.

CONDENSATE RETURN UNIT

EQUIPMENT NAME	SERVICE/ LOCATION	TANK CAPACITY (GAL)	NO. OF PUMPS	GPM (EACH)	NPSH REQ'D (FT)	DISCHARGE PRESSURE (PSIG)	ELECTRICAL					VFD (Y/N)	EMERGENCY POWER (Y/N)	BASIS OF DESIGN		REMARKS
							HP	RPM	V	Φ	HZ			MANUFACTURER	MODEL	
CRU-1	CITY HALL BLDG / CITY HALL MECH ROOM	15	2	15	2.0	30	0.75	3450	208	3	60	N	Y	SPIRAX SARCO	VJS-103	NOTE(S) 1,2

NOTES:
1. PROVIDE WALL MOUNTED CONTROL PANEL AS INDICATED ON PLANS.
2. CONDENSATE RETURN UNIT TO BE FABRICATED AS A COMPLETE SKID MOUNTED PACKAGE.
3. INCLUDE FACTORY ISOLATION VALVES.

SMMA

SYMMES MAINI & McKEE ASSOCIATES
1000 Massachusetts Avenue
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P:617.547.5400 F:617.648.4920

SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA 02143

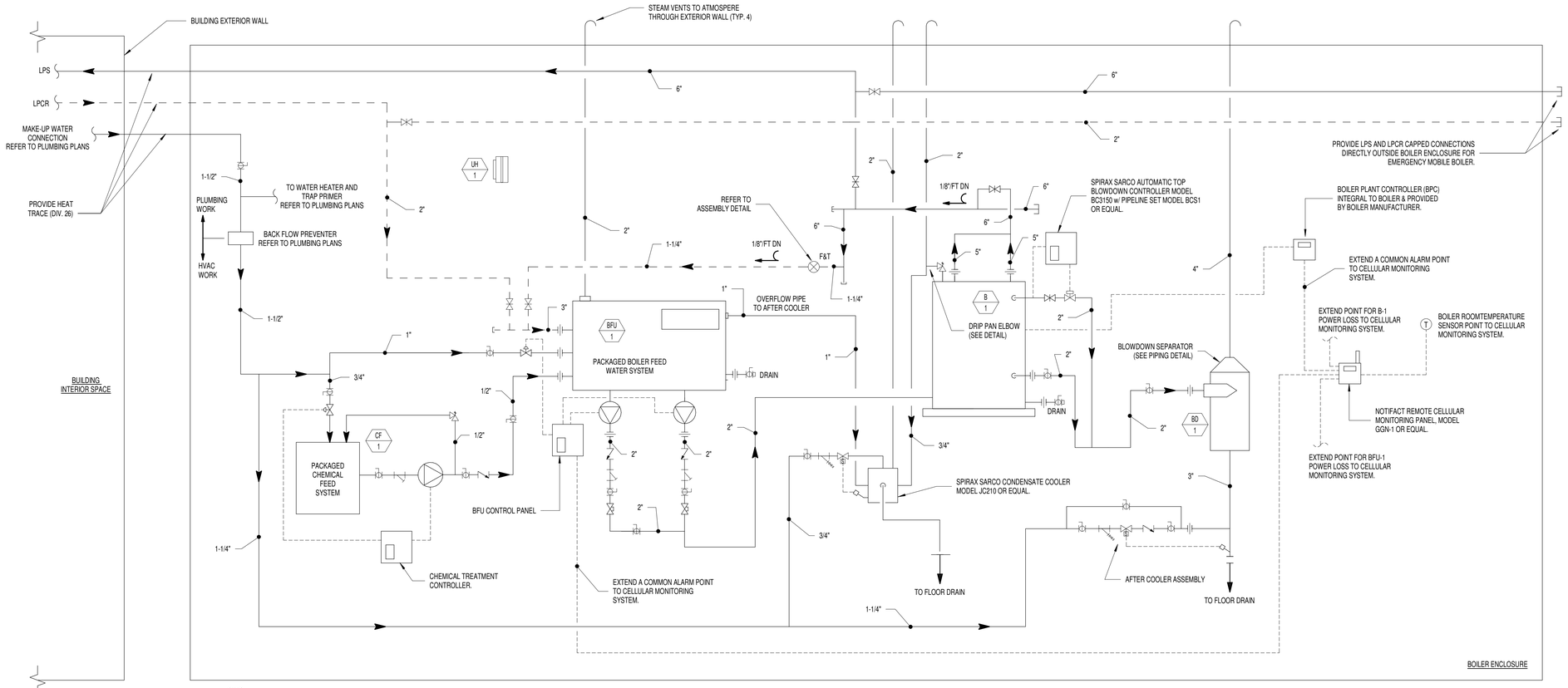
MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG
△ = CLOUDED CHANGE

SCALE	
DRAWN BY	AHC
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

SCHEDULE SHEET - BID ALTERNATE 1

M-601A



NOTES:
1. PROVIDE HARTFORD PIPING LOOP WHERE REQUIRED BY BOILER MANUFACTURER.
2. ATC TO PROVIDE POWER WIRING FOR ALL CONTROL PANELS WHERE REQUIRED.
3. CONTROL WIRING SHOWN SINGLE LINE FOR CLARITY. ATC TO PROVIDE ALL NECESSARY CONTROL WIRING AND CONDUCTORS BETWEEN CONTROLS PANELS, CONTROL VALVES AND EQUIPMENT .
4. ATC PROVIDE ALL INTERCONNECTING CONTROL WIRING TO COMBUSTION AIR LOUVER CONTROL DAMPERS.
5. BURNER SEQUENCE OF OPERATION TO BE LOW-HIGH-OFF. REFER TO SPECIFICATIONS FOR OTHER CONTROL REQUIREMENTS.

C1 STEAM FLOW DIAGRAM
SCALE: NTS

SMMA

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93 Highland Ave, Somerville, MA 02143

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SCALE	NTS
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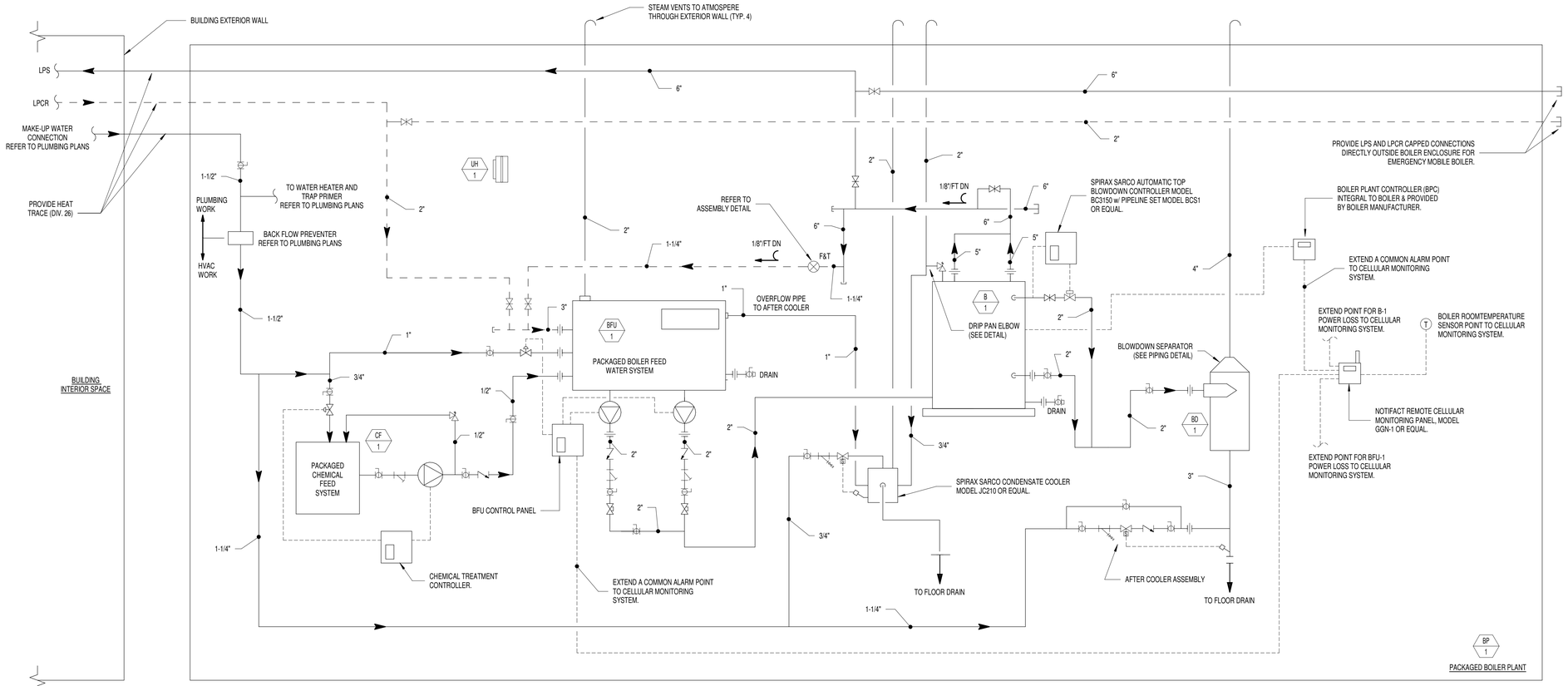
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

STEAM FLOW DIAGRAM

M-701



NOTES:
1. PROVIDE HARTFORD PIPING LOOP WHERE REQUIRED BY BOILER MANUFACTURER.
2. PROVIDE POWER WIRING FOR ALL CONTROL PANELS WHERE REQUIRED.
3. CONTROL WIRING SHOWN SINGLE LINE FOR CLARITY. PROVIDE ALL NECESSARY CONTROL WIRING AND CONDUCTORS BETWEEN CONTROLS PANELS, CONTROL VALVES AND EQUIPMENT .
4. PROVIDE ALL INTERCONNECTING CONTROL WIRING TO COMBUSTION AIR LOUVER CONTROL DAMPERS.
5. BURNER SEQUENCE OF OPERATION TO BE LOW-HIGH-OFF. REFER TO SPECIFICATIONS FOR OTHER CONTROL REQUIREMENTS.

C1 STEAM FLOW DIAGRAM
SCALE: NTS

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SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA 02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG
△ = CLOUDED CHANGE

SCALE	NTS
DRAWN BY	AHC / RD
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

STEAM FLOW DIAGRAM - BID ALTERNATE 1

M-701A

SMMA

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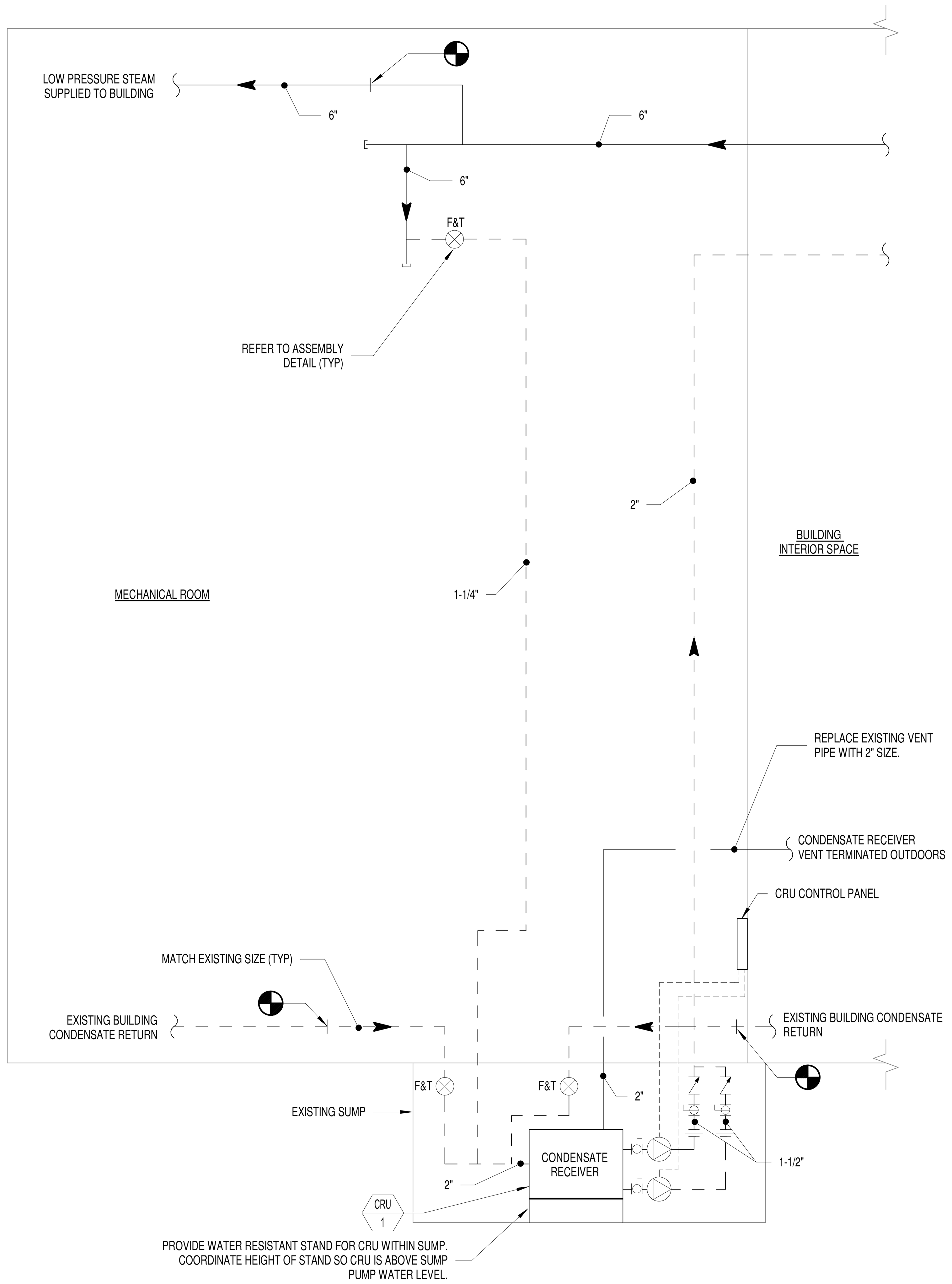
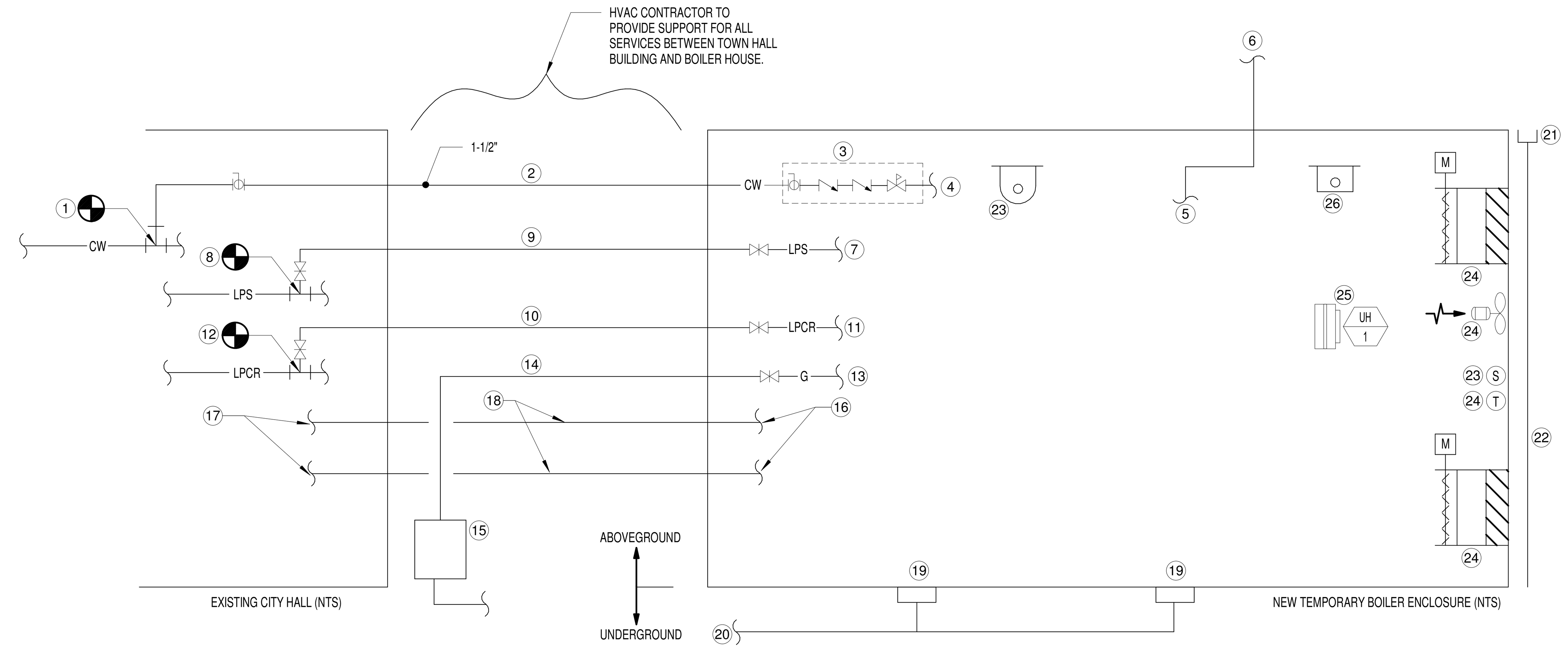
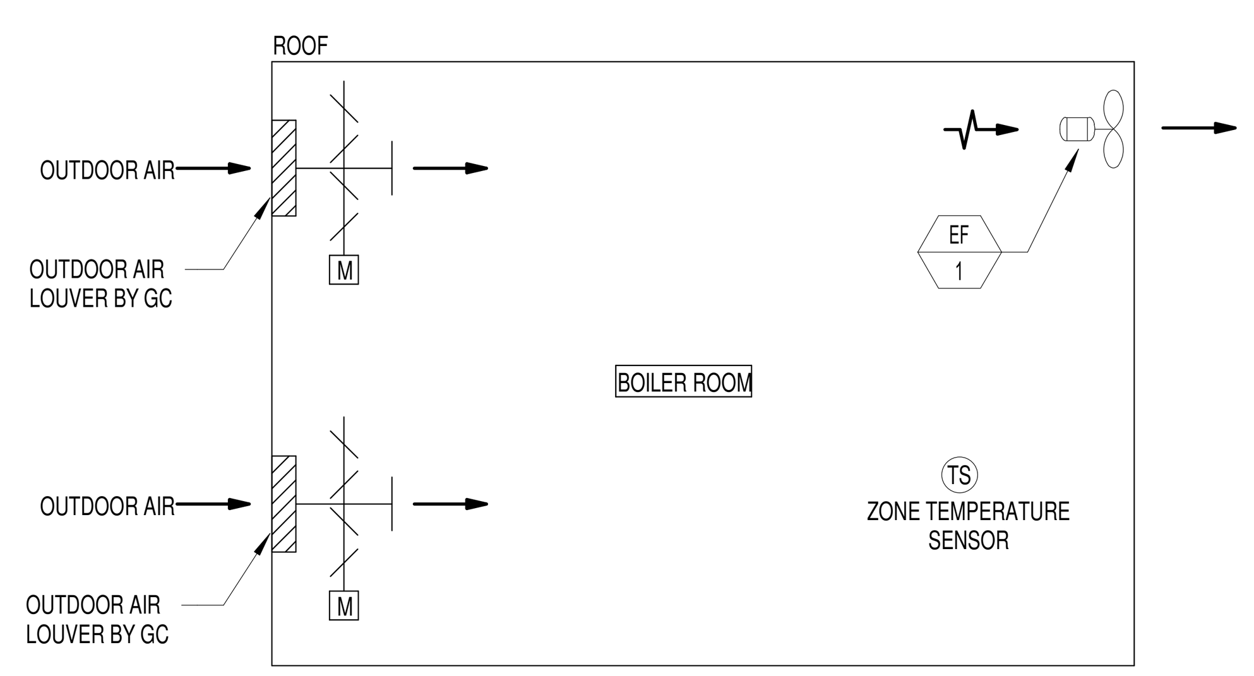


C1 STEAM FLOW DIAGRAM - EXISTING MECHANICAL ROOM
SCALE: NTS



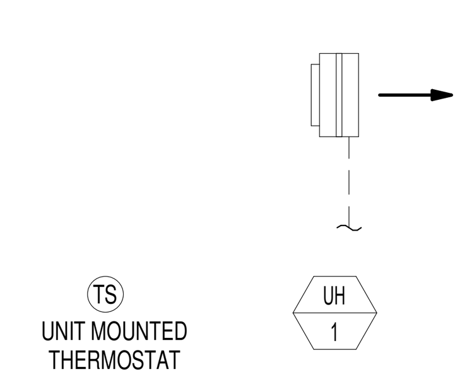
#	DESCRIPTION	RESPONSIBILITY	COMMENTS
1.	CONNECT TO MAKE UP WATER SOURCE IN CITY HALL.	PLUMBING CONTRACTOR	
2.	PIPE MAKE UP WATER TO BOILER HOUSE. INSULATE AND HEAT TRACE.	PLUMBING CONTRACTOR (HEAT TRACE BY ELE. SUBCONTRACTOR.)	HVAC CONTRACTOR TO PROVIDE SUPPORT FOR EXTERIOR PIPING.
3.	ISOLATION VALVE, RPBP, AND PRESSURE REDUCING VALVES.	PLUMBING CONTRACTOR	
4.	NPW TO BOILER FEED AND AFTER COOLER.	HVAC CONTRACTOR	
5.	FLUE FROM BOILER.	HVAC CONTRACTOR	
6.	FLUE FROM BOILER HOUSE TO TERMINATION AT ROOF.	HVAC CONTRACTOR	FIELD INSTALLED. PROVIDE ALL REQUIRED SUPPORTS ON ROOF.
7.	LPS FROM BOILERS.	HVAC CONTRACTOR	
8.	CONNECT NEW LPS TO EXISTING DISTRIBUTION IN CITY HALL.	HVAC CONTRACTOR	
9.	6" PIPING FROM BOILER HOUSE LPS POC TO CITY HALL BUILDING.	HVAC CONTRACTOR	ELECTRICAL SUBCONTRACTOR TO PROVIDE AND INSTALL HEAT TRACE. HVAC SUBCONTRACTOR TO INSULATE.
10.	2" LPCR PIPING FROM CITY HALL.	HVAC CONTRACTOR	HEAT TRACE BY ELECTRICAL CONTRACTOR. INSULATION BY HVAC SUBCONTRACTOR.
11.	2" LPCR DISTRIBUTION IN BOILER HOUSE.	HVAC CONTRACTOR.	
12.	2" LPCR - CONNECT TO EXISTING IN CITY HALL.	HVAC CONTRACTOR	
13.	4" GAS PIPING IN BOILER HOUSE.	PLUMBING CONTRACTOR	
14.	4" GAS PIPING FROM METER TO BOILER HOUSE.	PLUMBING CONTRACTOR	
15.	GAS METER AND NEW GAS SERVICE.	EVERSOURCE	
16.	POWER MAIN TO PANELBOARD AND FIRE ALARM DEVICES IN BOILER HOUSE.	ELECTRICAL CONTRACTOR	
17.	CONDUIT/POWER AND FIRE ALARM WIRING TO EXISTING PANEL IN CITY HALL.	ELECTRICAL CONTRACTOR	
18.	CONDUIT/POWER AND FIRE ALARM WIRING BETWEEN CITY HALL AND BOILER HOUSE.	ELECTRICAL CONTRACTOR	
19.	FLOOR DRAIN 4" - QTY 2.	PLUMBING CONTRACTOR	INSULATION BY PLUMBING SUBCONTRACTOR.
20.	6" SANITARY PIPING UNDER GROUND.	PLUMPING CONTRACTOR	PITCH TO TIE IN LOCATION UNDERGROUND. INSULATE AND HEAT TRACE ANY PIPING ABOVE GROUND.
21.	GUTTERS FOR BOILER HOUSE ROOF DRAINAGE.	BOILER ENCLOSURE MFR.	INSTALL IN FIELD BY GC.
22.	DOWN SPOUTS FROM GUTTER.	BOILER ENCLOSURE MFR.	INSTALL IN FIELD BY GC (QTY TBD).
23.	LIGHTING IN BOILER HOUSE.	ELECTRICAL CONTRACTOR	INCLUDES SWITCHES AND POWER WIRING.
24.	BOILER HOUSE VENTILATION.	HVAC CONTRACTOR	INCLUDES POWER WIRING AND CONTROLS FOR FAN AND INTAKE.
25.	BOILER HOUSE HEAT.	HVAC CONTRACTOR	INCLUDES UNIT HEATER, THERMOSTAT, CONTROLS, AND POWER WIRING (BY ELEC).
26.	EMERGENCY LIGHTS.	ELECTRICAL CONTRACTOR	
27.	BOILER SHUTOFF SWITCH.	ELECTRICAL CONTRACTOR	

C4 RESPONSIBILITY / COORDINATION DIAGRAM - BASE BID
SCALE: NTS



NOTES:
1. CONTROL DAMPERS TO BE PROVIDED WITH END SWITCHES.
2. INTERLOCK BOILERS AND FAN START/STOP WITH COMBUSTION AIR LOUVER CONTROL DAMPERS.
3. REFER TO SPECIFICATIONS FOR SEQUENCE OF OPERATIONS AND CONTROL REQUIREMENTS.

A1 BOILER ROOM VENTILATION
SCALE: NTS



NOTE: PROVIDE STANDALONE TEMPERATURE CONTROL REFER TO SPECIFICATIONS FOR SEQUENCE OF OPERATIONS AND CONTROL REQUIREMENTS.

A3 ELECTRIC UNIT HEATER
SCALE: NTS

SOMERVILLE CITY HALL BOILER PLANT
93 Highland Ave, Somerville, MA
02143

MARK:	DATE:	DESCRIPTION:
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ISSUE LOG

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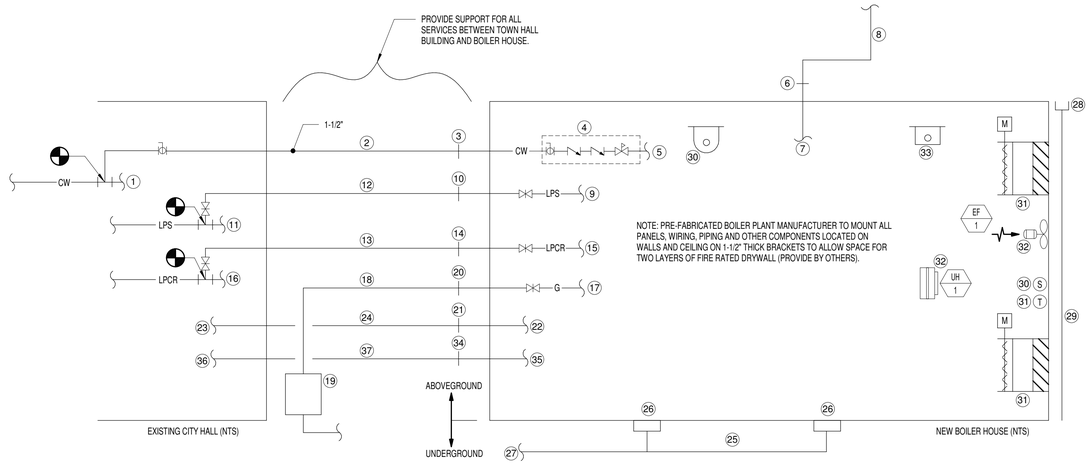
SCALE	NTS
DRAWN BY	AHC / BDH
CHECK BY	MOB
PROJ.ARCH./ENGR.	AHC
PROJ. MRG.	LBF
JOB NO.	17117

CONTROL DIAGRAMS

M-702



#	DESCRIPTION	RESPONSIBILITY	COMMENTS
1.	CONNECT TO MAKE UP WATER SOURCE IN CITY HALL.	PLUMBING CONTRACTOR	
2.	MAKE-UP WATER PIPE TO PRE-FAB BOILER PLANT. INSULATE AND HEAT TRACE.	PLUMBING CONTRACTOR (HEAT TRACE BY ELEC. CONTRACTOR.)	HVAC CONTRACTOR TO PROVIDE SUPPORT FOR EXTERIOR PIPING.
3.	1-1/2" POC FOR MAKE-UP WATER.	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP DURING SHIPPING.
4.	ISOLATION VALVE, RPBP, AND PRESSURE REDUCING VALVES.	PRE-FAB BOILER PLANT MFR	
5.	NPW TO BOILER FEED UNIT, CHEM TREATMENT, & AFTER COOLER.	PRE-FAB BOILER PLANT MFR	
6.	POC OF FLUES FOR BOILER.	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP ON FLUE DURING SHIPPING.
7.	FLUES FROM BOILER.	PRE-FAB BOILER PLANT MFR	
8.	FLUE FROM POC TO TERMINATION.	HVAC CONTRACTOR	FIELD INSTALLED. PROVIDE ALL REQUIRED SUPPORTS.
9.	LPS FROM BOILERS.	PRE-FAB BOILER PLANT MFR	
10.	POC OF LPS.	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP DURING SHIPPING.
11.	CONNECT NEW LPS TO EXISTING DISTRIBUTION IN CITY HALL.	HVAC CONTRACTOR	
12.	6" PIPING FROM BOILER HOUSE LPS POC TO CITY HALL BUILDING.	HVAC CONTRACTOR (HEAT TRACE BY ELEC. CONTRACTOR.)	HVAC CONTRACTOR TO ALSO PROVIDE SUPPORTSAND INSULATION.
13.	2" LPCR PIPING FROM POC TO CITY HALL.	HVAC CONTRACTOR (HEAT TRACE BY ELEC. CONTRACTOR.)	HVAC CONTRACTOR TO ALSO PROVIDE SUPPORTS AND INSULATION.
14.	2" LPCR POC.	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP DURING SHIPPING.
15.	2" LPCR DISTRIBUTION IN BOILER HOUSE.	PRE-FAB BOILER PLANT MFR	
16.	2" LPCR - CONNECT TO EXISTING IN CITY HALL.	HVAC CONTRACTOR	
17.	6" GAS PIPING IN BOILER HOUSE.	PRE-FAB BOILER PLANT MFR	
18.	6" GAS PIPING FROM METER TO POC ON BOILER HOUSE.	PLUMBING CONTRACTOR	
19.	GAS METER AND NEW GAS SERVICE.	NATIONAL GRID	GAS METER TO BE LOCATED AT THE SIDE OF CITY HALL BUILDING.
20.	6" GAS POC.	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP DURING SHIPPING.
21.	POWER CONDUIT POC	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP DURING SHIPPING.
22.	POWER MAIN TO ELECTRICAL PANEL IN BOILER HOUSE.	PRE-FAB BOILER PLANT MFR	
23.	CONDUIT / POWER WIRING TO EXISTING PANEL IN CITY HALL.	ELECTRICAL CONTRACTOR	
24.	CONDUIT/POWER WIRING BETWEEN CITY HALL AND BOILER HOUSE.	ELECTRICAL CONTRACTOR	
25.	FLOOR DRAIN PIPING.	PRE-FAB BOILER PLANT MFR	INSULATION BY SITE CONTRACTOR (POC TO UG).
26.	FLOOR DRAIN POC.	PRE-FAB BOILER PLANT MFR	HEAT TRACE BY ELECTRICAL SUBCONTRACTOR (POC TO UG).
27.	SANITARY PIPING UNDER GROUND.	SITE CONTRACTOR	PITCH TO TIE IN LOCATION UNDERGROUND. INSULATE AND HEAT TRACE ABOVE GROUND.
28.	GUTTERS FOR BOILER HOUSE ROOF DRAINAGE.	PRE-FAB BOILER PLANT MFR	SHIPPED LOOSE. INSTALL IN FIELD BY HVAC CONTRACTOR.
29.	DOWN SPOUTS FROM GUTTER	PRE-FAB BOILER PLANT MFR	SHIPPED LOOSE. INSTALL IN FIELD BY HVAC CONTRACTOR (QTY TBD).
30.	LIGHTING IN BOILER HOUSE.	PRE-FAB BOILER PLANT MFR	INCLUDES SWITCHES AND POWER WIRING.
31.	BOILER PLANT EXHAUST FAN AND COMBUSTION AIR INTAKE LOUVERS.	PRE-FAB BOILER PLANT MFR	INCLUDES POWER WIRING AND CONTROLS FOR EACH FAN AND INTAKE.
32.	BOILER PLANT HEAT.	PRE-FAB BOILER PLANT MFR	INCLUDES UNIT HEATER, THERMOSTAT, CONTROLS, AND POWER WIRING.
33.	EMERGENCY LIGHTS.	PRE-FAB BOILER PLANT MFR	
34.	FIRE ALARM POC.	PRE-FAB BOILER PLANT MFR	PROVIDE TEMPORARY CAP DURING SHIPPING.
35.	WIRING TO FIRE ALARM DEVICES IN BOILER HOUSE.	PRE-FAB BOILER PLANT MFR	
36.	CONDUIT / WIRING TO EXISTING FIRE ALARM PANEL IN CITY HALL.	ELECTRICAL CONTRACTOR	
37.	CONDUIT / FIRE ALARM WIRING BETWEEN CITY HALL AND BOILER HOUSE.	ELECTRICAL CONTRACTOR	

C4 RESPONSIBILITY / COORDINATION DIAGRAM - BID ALTERNATE 1
SCALE: NTS

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CONTROL DIAGRAMS - BID ALTERNATE 1

M-702A

GENERAL ABBREVIATIONS

#	
1P	SINGLE POLE
1PH, 1Ø	SINGLE PHASE
3PH,	3ØTHREE PHASE
4W	FOUR-WIRE
A	
A,AMP	AMPERE
AC	ARMORED CABLE
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
ANN	ANNUNCIATOR
ARCH	ARCHITECTURAL
ATM	AUTOMATIC TELLER MACHINE
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILLIARY
AV	AUDIO VISUAL
B	
BAT	BATTERY
BMS	BUILDING MANAGEMENT SYSTEM
C	
C, CND	CONDUIT (GENERIC NAME FOR RACEWAY) PROVIDED AS SPECIFIED
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CL	CENTERLINE
CLG	CEILING
CO	CARBON MONOXIDE
COAX	COAXIAL CABLE
COMM	COMMUNICATION
CP	CONTROL PANEL
CR	CONTROL RELAY
D	
DCP	DIMMER CONTROL PANEL
DS	DISCONNECT SWITCH
DWG	DRAWING
E	
EC	ELECTRICAL CONTRACTOR
ELEV	ELEVATOR
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EWC	ELECTRICAL WATER COOLER
F	
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FP	FIRE PROTECTION SYSTEM INSTALLER
FT	FEET
FUT	FUTURE
G	
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
H	
HH	HAND HOLE
HP	HORSEPOWER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
Hz	HERTZ
I	
IBC	INTERNATIONAL BUILDING CODE
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
INCL	INCLUDED WITH EQUIPMENT
J	
JB	JUNCTION BOX
K	
kCMIL	THOUSAND CIRCULAR MILS
kV	KILO-VOLT
kVA	KILO-VOLT AMPERE
kW	KILO-WATT

L	
LTG	LIGHTING
M	
MC	METAL CLAD
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MIC	MICROPHONE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTS	MANUAL TRANSFER SWITCH
N	
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO. #	NUMBER
NORM	NORMAL
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY AS APPROVED BY OSHA AND LOCAL AUTHORITIES
NTS	NOT TO SCALE
P	
PB	PULL BOX
PC	PLUMBING SYSTEM INSTALLER
PH	PHASE
PIR	PASSIVE INFRARED
PV	PHOTOVOLTAIC
PVC	POLY-VINYL CHLORIDE CONDUIT
R	
RGS	RIGID GALVANIZED STEEL
REQD	REQUIRED
S	
SD	SMOKE DETECTOR
SPDT	SINGLE POLE, DOUBLE THROW
SPKR	SPEAKER
SPST	SINGLE POLE, SINGLE THROW
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
T	
TC	TELECOMMUNICATIONS CABLE INSTALLER
TEL	TELEPHONE
TP	TAMPER PROOF, TWISTED PAIR
TPS	TWISTED PAIR SHIELDED
TYP	TYPICAL
U	
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY LISTING
UON	UNLESS OTHERWISE NOTED
V	
V	VOLT
VA	VOLT AMPERE
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
W	
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
T	
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

DEMOLITION ABBREVIATIONS

ETR	EXISTING DEVICE SHALL REMAIN.
ERM	EXISTING DEVICE SHALL BE REMOVED.
ERL	EXISTING DEVICE SHALL BE RELOCATED.
XRE	EXISTING DEVICE RELOCATED TO LOCATION SHOWN ON RENOVATION DRAWINGS. EXTEND WIRING ACCORDINGLY.

LIGHTING SYMBOLS

SYMBOL	DESCRIPTION
FR1 2 b / FS1 2 b / FR1 3 b / FW1 3 b	LIGHTING FIXTURE; "FR1" DENOTES TYPE (REFER TO FIXTURE SCHEDULE), NUMERAL DENOTES CIRCUIT NUMBER, "b" DENOTES FIXTURE CONTROLLED BY SWITCH "b".
X1	EXIT LIGHT CEILING MOUNTED WITH DIRECTIONAL ARROW AS INDICATED ON PLAN. (WALL MOUNTED WITHOUTARROWS).
FR1(E) NL / FP1	LIGHTING FIXTURE PROVIDED WITH EMERGENCY BATTERY BALLAST OR WIRED TO EMERGENCY LIGHTING CIRCUIT. (REFER TO LIGHTING FIXTURE SCHEDULE). "NL" DENOTES UNSWITCHED FIXTURE TO REMAIN ON AS"NIGHT LIGHT". "(E)" ALSO DENOTES EMERGENCY LIGHTING.
EB EB1	EMERGENCY BATTERY UNIT WITH UNIT MOUNTED LIGHTHEADS. NUMBER OF LIGHTHEADS AS INDICATED ON PLANS. "EB1" DENOTES TYPE (REFER TO LIGHTING FIXTURE SCHEDULE).
RH	REMOTE EMERGENCY DUAL LIGHTHEAD. "RH" DENOTES TYPE (REFER TO LIGHTING FIXTURE SCHEDULE).

FIXTURE TYPE KEY

F R 2

- SEQUENTIAL DIGIT IN ORDER
- MOUNTING TYPE:
  - R - RECESSED
  - S - SURFACE
  - W - WALL
  - T- TRACK POST TOP (SITE)
  - X - EXIT
  - P - PENDANT / POLE (SITE)
- LAMP TYPE:
  - F - FLUORESCENT
  - H - H.I.D.
  - L- LED
  - I - INCANDESCENT

SWITCHING DESIGNATIONS

SYMBOL	DESCRIPTION
S	SINGLE POLE SWITCH MOUNTED 4'-0" AFF.
S^2	TWO POLE SWITCH MOUNTED 4'-0" AFF.
S^M	MOTOR RATED SWITCH WITH THERMAL OVERLOAD PROTECTION MOUNTED 4'-0" AFF.

PANEL BOARDS AND TERMINAL CABINETS

SYMBOL	DESCRIPTION
	SURFACE MOUNTED 120/208 VOLT PANELBOARD 6'-6" AFF TO TOP. (FLUSH MOUNTED).

MOTORS, EQUIPMENT, AND CONTROLS

SYMBOL	DESCRIPTION
2	MOTOR. NUMERAL INDICATES HORSEPOWER.
	NON-FUSED DISCONNECT SWITCH. 3 POLE, 30 AMP, UNLESS OTHERWISE NOTED.
30AS 20AF	FUSED 3 POLE DISCONNECT SWITCH. "30A" DENOTES SWITCH SIZE, "20A" DENOTES FUSE SIZE.
30AS 20AF	COMBINATION STARTER/NON-FUSED DISCONNECT SWITCH. 3 POLE, 30 AMP SWITCH, WITH NEMA SIZE 1 STARTER UNLESS OTHERWISE NOTED. (WITH FUSED DISCONNECT SWITCH).
	MAGNETIC MOTOR STARTER.

OUTLET SYMBOLS

SYMBOL	DESCRIPTION
5 AF	DUPLEX RECEPTACLE - GROUNDING TYPE - MOUNTED 18" AFF UNLESS OTHERWISE INDICATED. NUMERAL INDICATES CIRCUIT NUMBER. "AF" INDICATES ARC FLASH TYPE. "TP" INDICATES TAMPER PROOF TYPE. "WP" INDICATES WEATHER PROOF TYPE (ACTIVE USE COVER).
	DUPLEX RECEPTACLE - GROUND FAULT INTERRUPTING TYPE - MOUNTED 18" AFF UNLESS OTHERWISE INDICATED.
	JUNCTION BOX (WALL MOUNTED).

CONDUIT AND WIRE SYMBOLS

SYMBOL	DESCRIPTION
LA-1	HOMERUN TO PANELBOARD "LA", CIRCUIT NUMBER 1. 3/4"C.- 2#12 & 1#12 GND., UNLESS OTHERWISE NOTED.
LA-1,3,5	HOMERUN TO PANELBOARD "LA", CIRCUIT NUMBERS 1,3,5. DIAGONAL LINES INDICATE NUMBER OF PHASE AND NEUTRAL WIRES. REFER TO WIRING NOTE 4 FOR ADDITIONAL INFORMATION.
	RACEWAY CONCEALED IN CEILING OR WALLS, OR EXPOSED IN UNFINISHED AREAS.
	FLEXIBLE RACEWAY; SIZE AS REQUIRED.
	CONDUIT UP.
	CONDUIT DOWN.

FIRE ALARM SYMBOLS

SYMBOL	DESCRIPTION
F	FIRE ALARM PULL STATION MOUNT CENTERLINE OF DEVICE AT 4'-0" AFF.
110cd F	FIRE ALARM AUDIBLE (HORN OR SPEAKER) / VISUAL (STROBE) COMBINATION MOUNT BOTTOM OF DEVICE AT 6'-8" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER. "110cd" DENOTES STROBE CANDELA RATING. NO "cd" VALUE INDICATES PROVIDE "75cd" STROBE.
110cd F	FIRE ALARM VISUAL NOTIFICATION DEVICE (STROBE ONLY). MOUNT BOTTOM OF DEVICE AT 6'-8" A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER. "110cd" DENOTES STROBE CANDELA RATING. NO "cd" VALUE INDICATES PROVIDE "75cd" STROBE.
135° F	FIRE ALARM HEAT DETECTOR, FIXED TEMPERATURE TYPE. "135" INDICATES TEMPERATURE SETTING.
135° R	FIRE ALARM HEAT DETECTOR, COMBINATION RATE OF RISE / FIXED TEMPERATURE. "135" INDICATES TEMPERATURE SETTING.
S CO	COMINATION FIRE ALARM SMOKE/CO DETECTOR.
S	FIRE ALARM SMOKE DETECTOR.
FACP	FIRE ALARM CONTROL PANEL.
ANN	FIRE ALARM ANNUNCIATOR PANEL.
F	WIRELESS MASTER BOX.

MOUNTING NOTES

INSTALL ALL ELECTRICAL DEVICES (FIRE ALARM, SWITCHES, RECEPTACLES, WORK BOXES, JUNCTION BOXES, EXIT SIGNS, LUMINAIRES, ETC.) IN THE LOCATIONS IDENTIFIED OR DIMENSIONED ON ARCHITECTURAL PLANS, DETAILS, OR ELEVATIONS. IF DEVICE LOCATION IS NOT SPECIFICALLY SHOWN ON ARCHITECTURAL DRAWINGS, FOLLOW THE GUIDELINES LISTED BELOW:

1. INSTALL NEARBY DEVICES ON ONE COMMON VERTICAL CENTERLINE.
2. INSTALL ADJACENT TO DEVICES LINED UP WITH A COMMON BOTTOM LINE.
3. INSTALL DEVICES AT INDICATED HEIGHT AS APPLICABLE UNLESS OTHERWISE INDICATED. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTER LINE OF DEVICE EXCEPT AS INDICATED BY NOTE 5.
4. ON MASONRY WALLS LINE UP THE BOTTOM OF THE DEVICE WITH A MASONRY JOINT AS CLOSE TO INDICATED HEIGHT AS PRACTICAL.
5. INSTALL WALL-MOUNTED EXIT SIGNS 8'-0" TO THE BOTTOM OF DEVICE AND WALL MOUNTED CLOCKS 8'-0" TO MIDDLE OF DEVICE. WHERE THESE DEVICES ARE INSTALLED ABOVE DOORS, MOUNT DEVICES 4" ABOVE DOOR FRAME TO BOTTOM OF DEVICE.
6. MOUNT PANELS SIX FEET TO THE TOP OF THE PANEL OR ANNUNCIATOR/FA GRAPHIC.
7. MOUNT EMERGENCY BATTERY UNITS AND WALL MOUNTED LIGHTING SENSORS (SENSOR ONLY, NOT SENSOR/SWITCH) 8'-0" TO CENTER OF DEVICE.
8. LOCATE CONTROL DEVICES AT LEAST 18" FROM AN INSIDE CORNER.
9. SUPPORT ALL LUMINAIRES INSTALLED IN SUSPENDED CEILING SYSTEMS DIRECTLY FROM THE BUILDING STRUCTURE, INDEPENDENT OF THE CEILNG SUPPORT SYSTEM.
10. ELECTRICAL WORK SHALL BE INSTALLED CONCEALED IN FINISHED AREAS, RECESSED INTO WALLS OR INSTALLED ABOVE HUNG CEILINGS UNLESS OTHERWISE INDICATED.
11. DO NOT INSTALL OUTLETS BACK TO BACK. PROVIDE 24 INCH SPACING IN FIRE RATED WALLS.
12. PROVIDE ELECTRICAL OUTLET PLATE GASKETS SEALS AT RECEPTACLES, SWITCHES AND OTHER ELECTRICAL BOXES ON EXTERIOR WALLS AND INTERIOR WALLS BETWEEN CONDITIONED AND NON-CONDITIONED SPACES.

NOTE: THIS SHEET IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS AND SHALL BE USED AS A DICTIONARY TO DEFINE ITEMS INDICATED ON DRAWINGS. NOT ALL SYMBOLS OR ABBREVIATIONS ARE NECESSARILY USED ON THIS PROJECT.

PROJECT NOTES

1. THE SCOPE OF WORK SHALL INCLUDE PROVIDING ALL WORK INDICATED UNLESS OTHERWISE SPECIFICALLY INDICATED AS EXISTING OR WORK BY OTHERS, AND COORDINATION WILL ALL TRADES SCOPE OF WORK IS INDICATED ON THE CONTRACT DOCUMENTS INCLUDING THE DRAWINGS AND THE SPECIFICATIONS, WHICH ARE COMPLIMENTARY. WORK INDICATED IN ANY CONTRACT DOCUMENT SHALL BE CONSIDERED PART OF THE SCOPE OF WORK, UNLESS SPECIFICALLY INDICATED AS EXISTING OR WORK BY OTHERS. IN GENERAL, WORK REQUIREMENTS ARE NOT INDICATED IN BOTH DOCUMENTS. WHERE DOCUMENTS CONFLICT WITHIN THEMSELVES OR WITH CODES AND REGULATIONS, PROVIDE THE HIGHER QUANTITY AND QUALITY AND FOLLOW THE STRICTER REQUIREMENTS.
2. WORK AT A MINIMUM SHALL BE IN ACCORDANCE WITH OSHA, NFPA STANDARDS, THE ELECTRICAL CODE AND THE LOCAL GOVERNING AUTHORITIES. THE DRAWINGS AND SPECIFICATIONS DO NOT ATTEMPT TO INDICATE ALL WORK REQUIRED BY CODE AND AUTHORITIES. DO NOT INSTALL WORK THAT DOES NOT MEET THE MINIMUM REQUIREMENTS. IF NECESSARY, REQUEST CLARIFICATION FROM ARCHITECT BEFORE PROCEEDING.
3. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER. RECTILINEAR TO BUILDING STRUCTURE.
4. ALL COMPONENTS SHOWN ON THE RISER DIAGRAMS OR DETAILS, BUT NOT ON THE PLAN OR VICE VERSA SHALL BE INCLUDED AS IF SHOWN ON BOTH.
5. IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS TO PROVIDE A WORKING INSTALLATION IN EVERY DETAIL AND ALL ITEMS REQUIRED FOR SUCH AN INSTALLATION SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY INDICATED OR MENTIONED.
6. VISIT THE SITE TO DETERMINE PRE-EXISTING CONDITIONS AND WORK NECESSARY PRIOR TO SUBMISSION OF BID PRICE. SUBMIT ANY QUESTIONS REQUIRED TO CLARIFY SCOPE PRIOR TO BID. INCLUDE ALL REQUIRED WORK IN BID PRICE.
7. INCLUDE IN BID WHATEVER IS REQUIRED TO MEET SCHEDULE INCLUDING OVERTIME, EXPRESS SHIPPING, EXPEDITING EQUIPMENT, ETC. PLAN PROJECT AND SUBMIT SHOP DRAWING AND ORDER EQUIPMENT IN A TIMELY MANNER, EQUIPMENT SHALL BE BASED ON THE SPECIFIED EQUIPMENT.
8. ANY EQUIPMENT TO BE SUBSTITUTED SHALL BE IDENTIFIED AT TIME OF BID. REFER TO SPECIFICATIONS.
9. TEST ALL EQUIPMENT AND SYSTEMS INSTALLED TO CERTIFY COMPLIANCE WITH DRAWINGS, SPECIFICATIONS, CODES, LOCAL AUTHORITIES AND REGULATIONS. INCLUDE LABOR AND COSTS FOR TESTING, REVIEWS, APPROVALS AND CERTIFICATIONS.
10. PROVIDE TRAINING TO OWNER ON ALL EQUIPMENT AND SYSTEMS INSTALLED.
11. TEMPORARY LIGHTING AND POWER SHALL BE PROVIDED AS REQUIRED BY OSHA, CODES AND LOCAL AUTHORITIES. REMOVE ALL TEMPORARY FACILITIES PROVIDED AT PROJECT COMPLETION.
12. UNLESS OTHERWISE INDICATED ON PLANS OR IN SPECIFICATIONS; ALL CONDUCTORS, POWER DISTRIBUTION EQUIPMENT BUSSING AND TRANSFORMER WINDINGS PROVIDED SHALL BE FABRICATED OF 98% CONDUCTIVE COPPER MATERIAL.

INSTALLATION COORDINATION NOTES

1. PRIOR TO ROUGH-IN OF ELECTRICAL PROVISIONS FOR OWNER FURNISHED EQUIPMENT AND EQUIPMENT PROVIDED BY OTHER TRADES, COORDINATE WITH THE GENERAL CONTRACTOR, EQUIPMENT SHOP DRAWINGS AND APPLICABLE EQUIPMENT INSTALLER FOR EXACT LOCATION AND WIRING REQUIREMENTS. PROVIDE ALL NECESSARY EQUIPMENT, WIRING AND ACCESSORIES FOR COMPLETE INSTALLATION. MAKE ALL FINAL CONNECTIONS AS REQUIRED, I.E POWER, CONTROL, INTERLOCK, ETC.
2. ELECTRICAL EQUIPMENT, RACEWAYS AND OUTLETS MOUNTED TO AND OR INSTALLED IN OWNER FURNISHED FURNITURE SHALL BE COORDINATED WITH THE EQUIPMENT AND FURNITURE INSTALLERS AND THE GENERAL CONTRACTOR PRIOR TO ROUGH-IN. EXCEPT WHERE INDICATED OR REQUIRED OTHERWISE.
3. IF EXACT LOCATION, MOUNTING OR RACEWAY ROUTING ARE NOT INDICATED OR ARE NOT CLEAR OR CONFLICT (LOCATION OR HEIGHT) COORDINATE WITH OTHER TRADES AND REQUEST CLARIFICATION PRIOR TO ROUGHING, OR INSTALLATION. DRAWINGS ARE DIAGRAMMATIC ONLY. EXACT LOCATION, MOUNTING HEIGHTS OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE COORDINATED WITH THE EQUIPMENT REQUIREMENTS AND FIELD CONDITIONS.
4. UNLESS OTHERWISE DIRECTED, PROVIDE ALL NEW POWER DISTRIBUTION EQUIPMENT WITH AIC RATINGS THAT MATCH OR EXCEED THE AIC RATING OF THE NEXT ACTIVE EXISTING UPSTREAM OVER-CURRENT PROTECTIVE DEVICE SERVING THE PANEL WHEN SERVED DIRECTLY (EG. NO TRANSFORMER) BY A 277/480 VOLT SOURCE OR PROVIDE AIC RATING THAT EXCEEDS BY 10% THE MAXIMUM LET THROUGH FAULT CURRENT (UNDER INFINITE PRIMARY BUSS) OF THE NEXT ACTIVE UPSTREAM TRANSFORMER (EXISTING OR NEW) SERVING THE RESPECTIVE NEW PANEL.
5. ALL NEW PANELS SHALL BE FULLY RATED FOR THE DESIGNATED AIC VALUE; PANELS UTILIZING SERIES RATINGS WILL NOT BE ACCEPTABLE. NEW CIRCUIT BREAKERS PROVIDED IN EXISTING PANELS SHALL BE PROVIDED WITH AIC RATINGS THAT MATCH OR EXCEED THE HIGHEST RATED OVER-CURRENT PROTECTIVE DEVICE WITHIN THE RESPECTIVE EXISTING PANEL.

WIRING NOTES

1. WIRING IS INDICATED ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
2. ALL WIRING SHALL BE RUN CONCEALED UNLESS SPECIFIED OTHERWISE. ALL EXPOSED WIRING INCLUDING THAT WHICH IS INSTALLED ABOVE BUT IS VISIBLE FROM BELOW, PARTIALLY OR FULLY OPEN CEILINGS, SHALL BE INSTALLED IN CONDUIT OR RACEWAYS. REFER TO SPECIFICATIONS FOR ACCEPTABLE WIRING METHODS.
3. WIRING AND CONDUIT SHALL BE REQUIRED FOR ALL SWITCHES, AND OUTLETS INDICATED WITH CIRCUIT NUMBERS. PROVIDE 3/4"C., 3#12 UNLESS OTHERWISE INDICATED (1ϕ, 1N, 1G.). WIRE AND CONDUIT SIZES ON HOME RUNS SHALL BE CONTINUOUS THROUGHOUT CIRCUIT, REFER TO VOLTAGE DROP CHART. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
4. RACEWAYS SHALL BE LIMITED TO SIX CURRENT CARRYING CONDUCTORS (PHASE AND NEUTRALS) AND GROUNDING CONDUCTOR, PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH SINGLE PHASE RECEPTACLE OR LIGHTING CIRCUIT, UNLESS OTHERWISE INDICATED OR IF OVERSIZED NEUTRAL IS SPECIFIED. CIRCUITS WITH SHARED NEUTRALS SHALL BE PROVIDED WITH CIRCUIT BREAKERS THAT HAVE A COMMON TRIP (E.G. FURNITURE WHIPS).
5. MARK ALL CONDUITS AND JUNCTION BOXES WITH PERMANENT MARKER INDICATING PANEL AND CIRCUIT NUMBER OF CONDUCTORS CONTAINED WITHIN. LABEL WHERE CONDUITS ENTER PANELS, WIRE WAYS, PULL BOXES, ETC. LABEL EMPTY CONDUITS WITH SYSTEM (VOICE, DATA, SECURITY, ETC.) AND SOURCE OF CONDUIT.
6. ELECTRICAL WORK NOT SERVING STAIRWELLS SHALL NOT PASS THROUGH A STAIR ENCLOSURE UNLESS AN APPROVED RATED SOFFIT IS PROVIDED TO MAINTAIN FIRE AND SMOKE RATING.
7. PROVIDE WATERTIGHT AND GAS TIGHT SEALS INSIDE AND OUTSIDE OF CONDUITS THAT PENETRATE THE BUILDING BELOW GRADE, O.Z. GEDNEY OR APPROVED EQUAL. PROVIDE WEATHER TIGHT SEAL AT PENETRATIONS ABOVE GRADE.
8. PROVIDE NRTL LISTED SMOKE AND FIRE SEALS AT ALL PENETRATIONS THROUGH FLOORS OR FULL HEIGHT (FLOOR TO FLOOR) WALLS.

RECEPTACLE COLOR CODE REQUIREMENTS

UNLESS OTHERWISE INDICATED PROVIDE 20A HEAVY DUTY GRADE RECEPTACLES COLOR CODE AS FOLLOWS.

A. NORMAL POWER - BLACK OR AS SELECTED BY ARCHITECT

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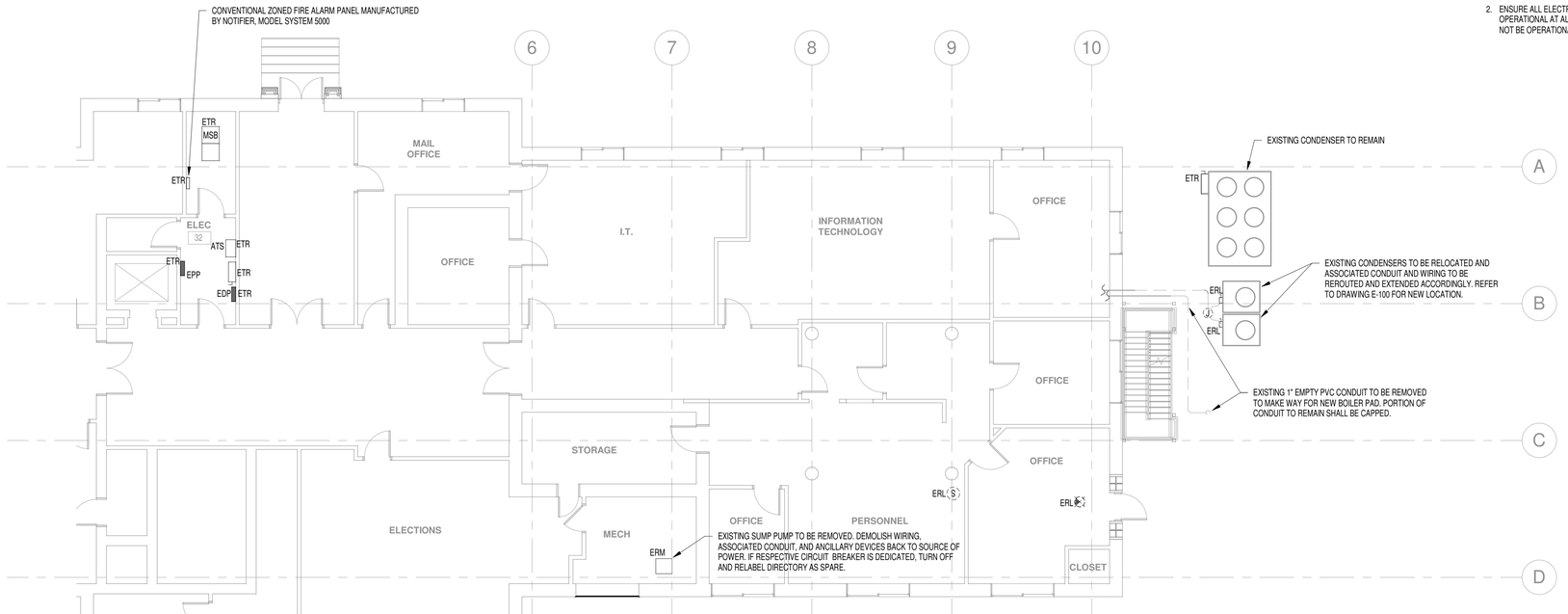
DRAWN BY	JA
CHECK BY	RG
PROJ.ARCH./ENGR.	CRL
PROJ. MRG.	LBF
JOB NO.	17117

SYMBOL LEGEND AND NOTES

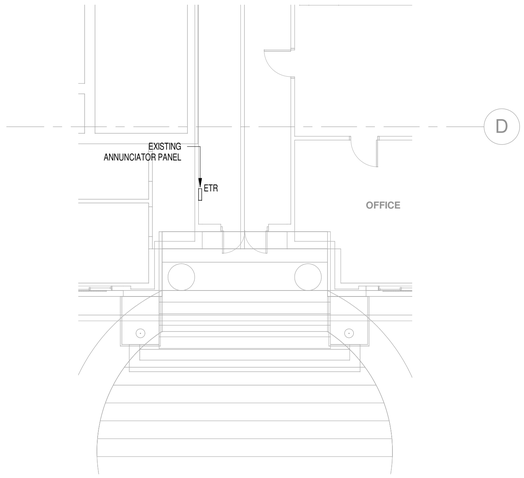
E-001

GENERAL NOTES:

1. THE E.C. SHALL VISIT THE SITE PRIOR TO PROVIDING A BID TO PERFORM A FULL AND THOROUGH WALK-THROUGH TO FAMILIARIZE THEMSELVES WITH ALL ASPECTS OF THE EXISTING CONDITIONS IN PREPARATION OF THE PROPOSED SCOPE OF WORK AS DESCRIBED AND DIAGRAMMATICALLY DEPICTED ON THESE PLANS.
2. ENSURE ALL ELECTRICAL DEVICES AND EQUIPMENT OUTSIDE THE WORK AREA REMAIN FULLY OPERATIONAL AT ALL TIMES. PROVIDE THE OWNER 24 HOURS IN ADVANCE OF ANY SPACES THAT MAY NOT BE OPERATIONAL DURING THE EXECUTION OF WORK.



D1 BASEMENT - DEMOLITION
SCALE: 1/8" = 1'-0"



A1 1ST FLOOR VESTIBULE - PART PLAN
SCALE: 1/8" = 1'-0"

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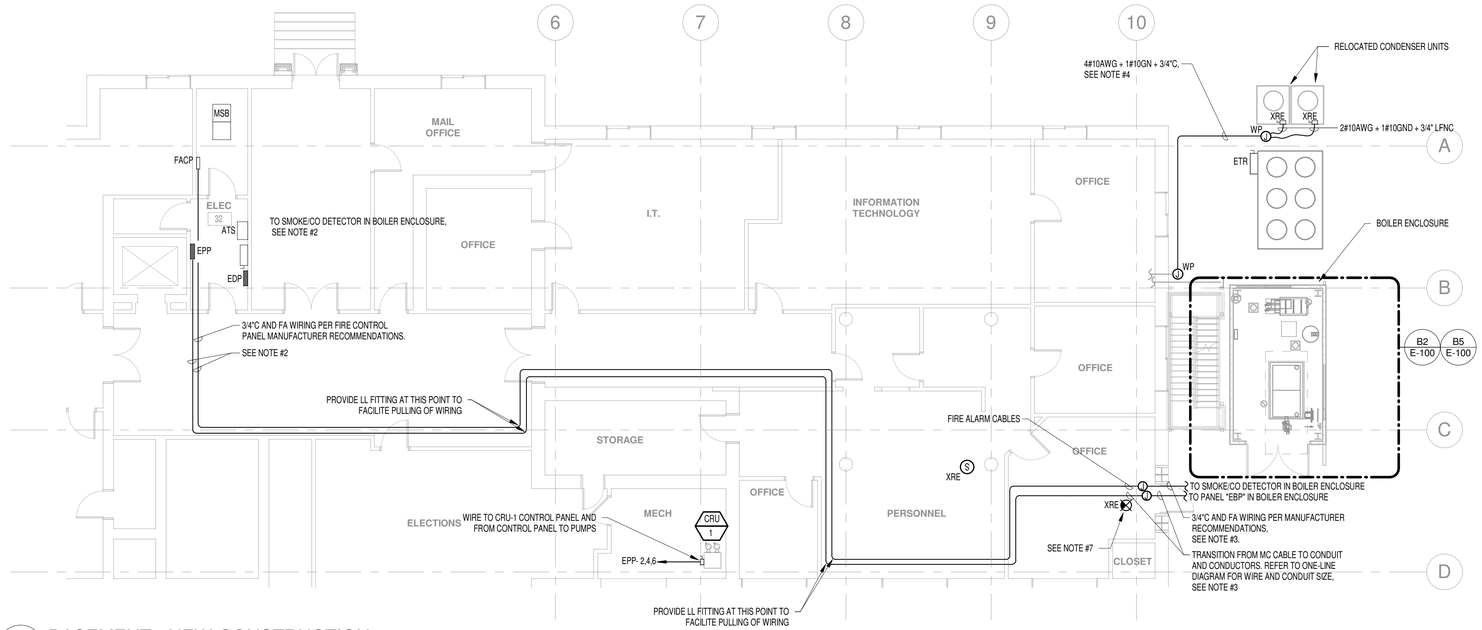
BASEMENT DEMOLITION PLAN

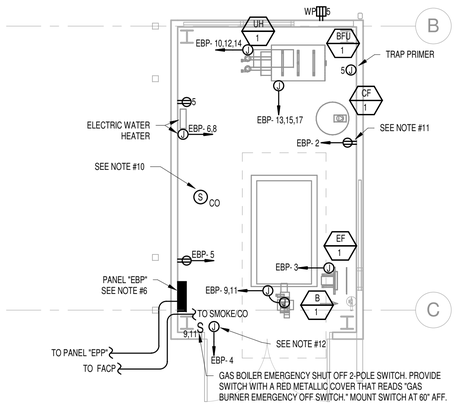
KEY PLAN

NORTH

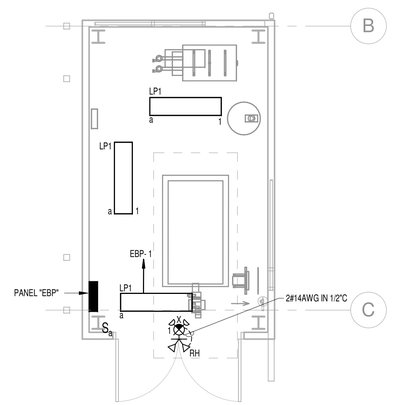
ED100



D1 BASEMENT - NEW CONSTRUCTION
SCALE: 1/8" = 1'-0"



B2 BOILER ENCLOSURE - POWER PART PLAN
SCALE: 1/4" = 1'-0"



B5 BOILER ENCLOSURE - LIGHTING PART PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. FEEDER POWERING PANEL "EBP" SHALL BE INSTALLED ABOVE THE DROPPED CEILING WITHIN FINISHED SPACES . UTILIZE MC CABLE WITHIN THE BUILDING AND TRANSITION TO CONDUCTORS AND PVC CONDUIT WHEN ROUTED OUTDOORS.
2. INSTALL ELECTRICAL CONDUITS EXPOSED BELOW THE DROPPED CEILING. ENSURE CONDUITS ARE NOT DIRECTLY ROUTED BELOW LIGHT FIXTURES, MOTION SENSORS, FIRE ALARM DEVICES ETC. THE CONDUITS SHALL BE INSTALLED TIGHT TO CEILINGS AND WALLS AS POSSIBLE. UTILIZE THREADED RODS AND UNISTRUT. REMOVE AND REINSTALL EXISTING CEILING TILES TO FACILITATE INSTALLATION OF UTILITY HANGERS. COORDINATE ROUTING WITH ALL TRADES AS PLUMBING AND MECHANICAL PIPES HAVE SIMILAR ROUTES.
3. PORTION OF ELECTRICAL PANEL FEEDER AND FIRE ALARM CONDUITS ROUTED OUTDOORS SHALL CLOSELY FOLLOW HVAC AND PLUMBING PIPES TO THE STEAM BOILER ENCLOSURE. BRACKETS TO BE PROVIDED BY MECHANICAL CONTRACTOR AND STRAPS PROVIDED BY ELECTRICAL CONTRACTOR. INSTALL CONDUITS ON BOTTOM PORTION OF BRACKET. REFER TO MECHANICAL DRAWINGS FOR BRACKET DETAIL SHOWING ALLOCATED SPACE FOR ELECTRICAL CONDUITS. COORDINATE INSTALLATION WITH MECHANICAL AND PLUMBING CONTRACTORS PRIOR TO COMMENCING WORK.
4. BRANCH CIRCUIT POWERING RELOCATED CONDENSER UNITS SHALL CLOSELY FOLLOW RESPECTIVE HVAC PIPES. PROVIDE CONDUIT SUPPORT AS NEEDED SUCH AS STRAPS, CLIPS, UNISTRUT ETC. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR PRIOR TO COMMENCING WORK. CARRY FOR WIRE AND CONDUIT SIZE AS SHOWN. ACTUAL SIZES TO MATCH EXISTING.
5. POWER EXIT SIGNS FROM RESPECTIVE AREA UNSWITCHED LIGHTING BRANCH CIRCUIT.
6. LOCATION OF PANEL "EBP" TO BE COORDINATED IN THE FIELD WITH THE PLUMBING AND MECHANICAL CONTRACTOR TO ENSURE FOREIGN EQUIPMENT DOES NOT IMPEDE THE ELECTRICAL PANEL'S WORKING AND EQUIPMENT CLEARANCES.
7. PENDANT MOUNT EXISTING RELOCATED EXIT SIGN TO ENSURE THE VIEW IS NOT OBSTRUCTED BY THE CONDUITS AND PIPES HANGING BELOW THE CEILING. EXTEND WIRING AND UTILIZE ROUND BACK BOXES AND EMT CONDUIT AS REQUIRED.
8. COORDINATE ALL MECHANICAL EQUIPMENT ELECTRICAL AND INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO COMMENCING WORK. ANY DEVIATIONS FROM THE ELECTRICAL PLANS SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER OF RECORD.
9. COORDINATE BOILER ENCLOSURE LIGHT FIXTURE LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO COMMENCING WORK TO AVOID CONFLICTS WITH EQUIPMENT, PIPES, DUCTWORK ETC.
10. WIRE BOILER ENCLOSURE COMBINATION SMOKE/CO DETECTOR TO TWO (2) SPARE ZONES IN THE EXISTING FIRE ALARM CONTROL PANEL. UPON DETECTION OF SMOKE, THE FOLLOWING SHALL OCCUR:
    - -ACTIVATE FIRE ALARM SIGNALING SYSTEM INCLUDING DEVICE SOUNDER BASE (3-TONE TEMPORAL SOUND)
    - -NOTIFY LOCAL FIRE DEPARTMENT VIA EXISTING MASTER BOX
    - -ANNUNCIATE ZONE AT REMOTE ANNUNCIATOR PANEL

    UPON DETECTION OF CO, THE FOLLOWING SHALL OCCUR:
    - -ACTIVATE CO DETECTOR SOUNDER BASE, EMITTING A 4-TONE TEMPORAL SOUND
    - -NOTIFY LOCAL FIRE DEPARTMENT AS A CO SIGNAL VIA EXISTING RADIO MASTER BOX
    - -TROUBLE SIGNAL AT FIRE ALARM CONTROL PANEL SHALL BE ACTIVATED
    - -ANNUNCIATE ZONE AT REMOTE ANNUNCIATOR PANEL

    EXISTING FIRE ALARM ANNUNCIATOR PANEL IS LOCATED IN THE FIRST FLOOR REAR VESTIBULE ENTRANCE (REFER TO DRAWING ED100). LABEL SPARE ZONES AS "BOILER ENCLOSURE SMOKE" AND "BOILER ENCLOSURE CO" (TYPE WRITTEN SIMILAR TO EXISTING). PROGRAM THE SYSTEM TO ACTIVE THE RESPECTIVE INDICATOR LIGHT.
11. CHEMICAL TANK CONTROL PANEL RECEPTACLE. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
12. JUNCTION BOX POWERING THREE (3) SELF-REGULATING HEAT TRACE CABLES EACH SERVING STEAM PIPE, CONDENSATE PIPE, AND DOMESTIC WATER PIPE. EXTEND ALL HEAT TRACE CABLES 6" INTO MAIN BUILDING AND BOILER ENCLOSURE. COORDINATE LOCATION AND HEIGHT IN FIELD WITH MECHANICAL AND PLUMBING CONTRACTORS. REFER TO SPECIFICATIONS FOR HEAT TRACE REQUIREMENTS. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR PIPE LENGTH.

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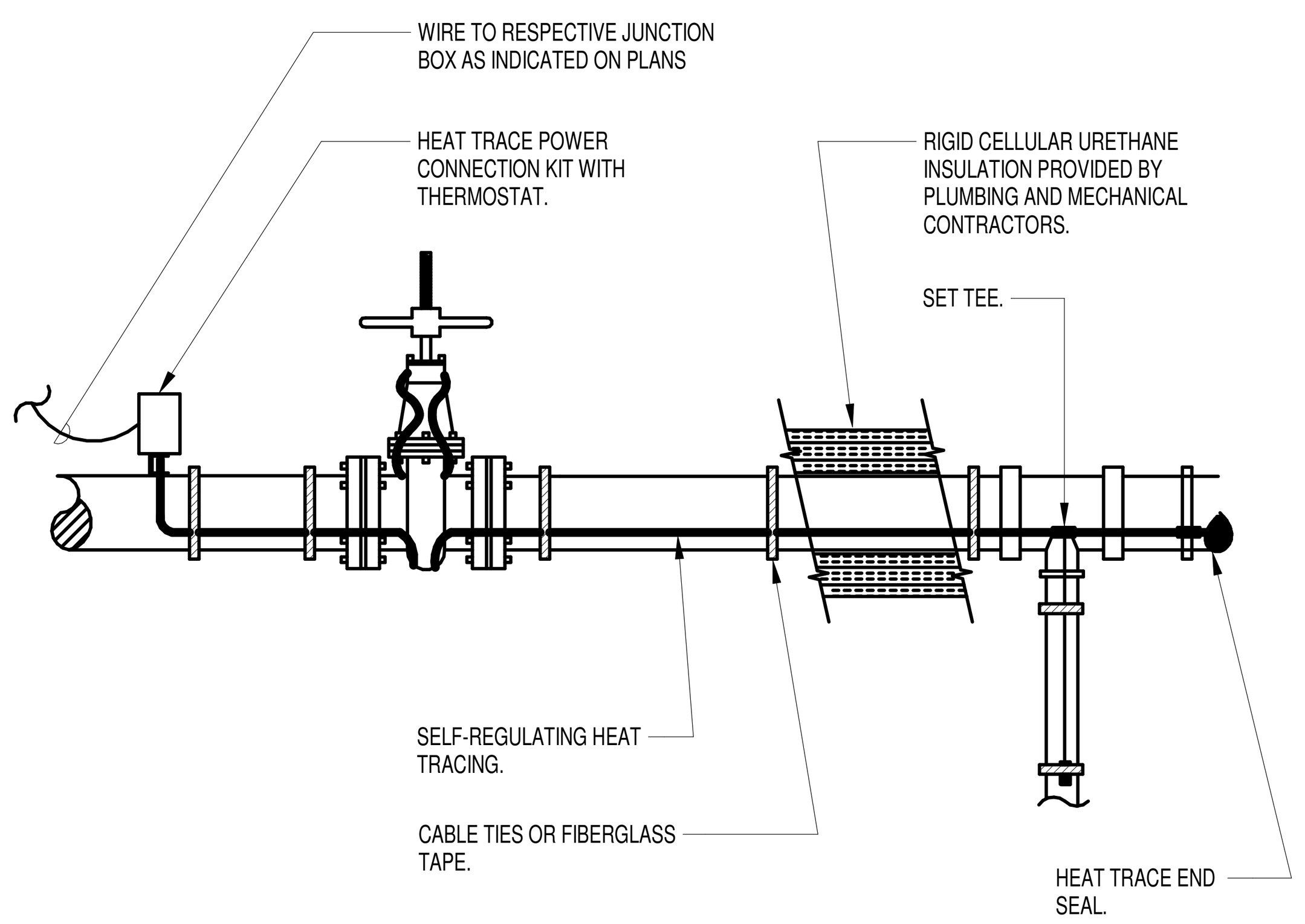
DRAWN BY	JA
CHECK BY	RG
PROJ.ARCH./ENGR.	CRL
PROJ. MRG.	LBF
JOB NO.	17117

BASEMENT CONSTRUCTION PLAN

KEY PLAN

NORTH

E-100

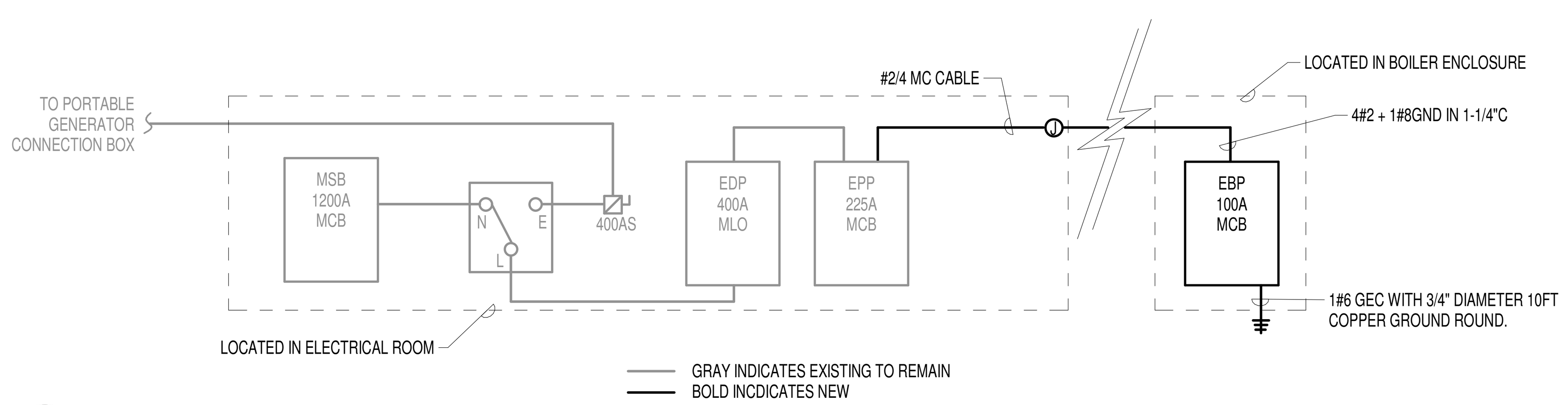


NOTES:

1. COORDINATE HEAT TRACE INSTALLATION WITH PLUMBING AND MECHANICAL CONTRACTORS. ONCE HEAT TRACE IS INSTALLED, INSULLATION TO BE INSTALLED BY THE PLUMBING AND HVAC CONTRACTOR.
2. INSTALL HEAT TRACE PER MANUFACTURER RECOMMENDATIONS.

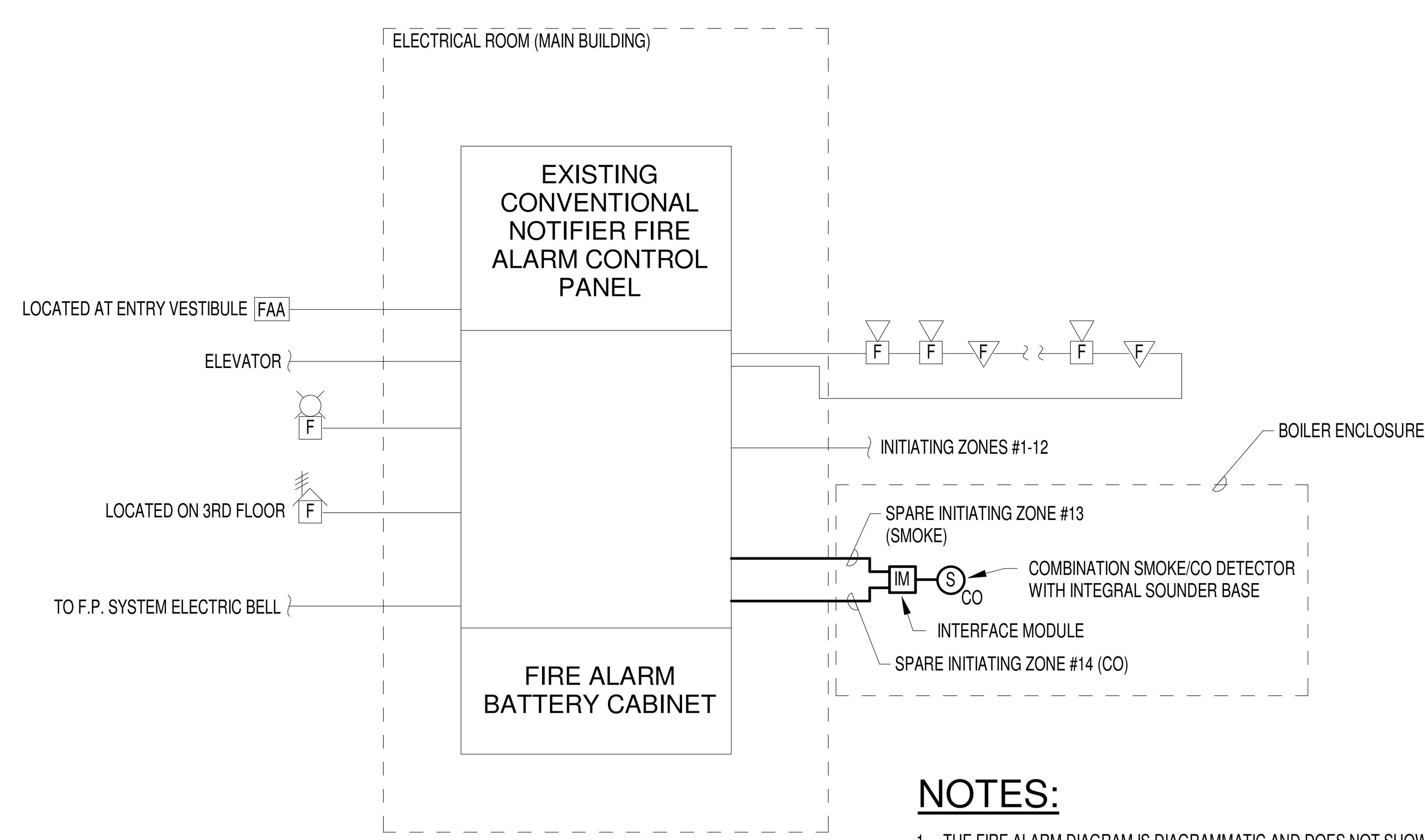
E1 TYPICAL HEAT TRACE INSTALLATION DETAIL

SCALE: NTS



C1 ONE-LINE DIAGRAM

SCALE: NTS



NOTES:

1. THE FIRE ALARM DIAGRAM IS DIAGRAMMATIC AND DOES NOT SHOW ALL DEVICES AND WIRING.
2. ALL EXISTING DEVICES AND WIRING SHALL REMAIN AND REMAIN FULLY OPERATIONAL.
3. PROVIDE ALL ADDITIONAL WIRING, DEVICES, PROGRAMMING ETC AS REQUIRED TO INCORPORATE THE NEW COMBINATION SMOKE/CO DETECTOR TO THE EXISTING FIRE ALARM CONTROL PANEL FOR A COMPLETE OPERATIONAL AND CODE COMPLIANT FIRE ALARM SYSTEM.
4. REFER TO DRAWING E-100 FOR FIRE ALARM SEQUENCE OF OPERATIONS.

GRAY INDICATES EXISTING TO REMAIN
BOLD INDICATES NEW

A1 FIRE ALARM ONE-LINE DIAGRAM

SCALE: NTS

BRANCH CIRCUITS SCHEDULE

120 OR 277 VOLT 1Φ, 2W. CIRCUITS

CIRCUIT BREAKER	CONDUCTOR
20A-1P	2 #12 & 1 #12 GND. - 3/4"C.
30A-1P	2 #10 & 1 #10 GND. - 3/4"C.
40A-1P	2 #8 & 1 #10 GND. - 3/4"C.
50A-1P	2 #6 & 1 #10 GND. - 3/4"C.
60A-1P	2 #6 & 1 #10 GND. - 3/4"C.

208 OR 480 VOLT 1Φ, 2W. CIRCUITS

CIRCUIT BREAKER	CONDUCTOR
20A-2P	2 #12 & 1 #12 GND. - 3/4"C.
30A-2P	2 #10 & 1 #10 GND. - 3/4"C.
40A-2P	2 #8 & 1 #10 GND. - 3/4"C.
50A-2P	2 #6 & 1 #10 GND. - 3/4"C.
60A-2P	2 #6 & 1 #10 GND. - 3/4"C.

208 OR 480 VOLTS, 3Φ, 3W. CIRCUITS

CIRCUIT BREAKER	CONDUCTOR
15A-3P, 20A-3P	3 #12 & 1 #12 GND. - 3/4"C.
30A-3P	3 #10 & 1 #10 GND. - 3/4"C.
40A-3P	3 #8 & 1 #10 GND. - 3/4"C.
50A-3P	3 #6 & 1 #10 GND. - 3/4"C.
60A-3P	3 #6 & 1 #10 GND. - 3/4"C.

NOTES:
1. TYPE MC CABLE SHALL INCLUDE FULL SIZE INSULATED GROUND CONDUCTOR. SIZES AS INDICATED IN SCHEDULE.
2. UPGRADE WIRE SIZE ACCORDING TO VOLTAGE DROP CHART

THREE PHASE AND SINGLE PHASE CIRCUIT SCHEDULE NOTES

1. UNLESS OTHERWISE INDICATED, CONDUCTOR SIZING SHALL MATCH THE SIZE INDICATED FOR THE APPLICABLE OVERCURRENT DEVICE. PROVIDE LARGER CONDUCTORS AND RACEWAY WHERE INDICATED.
2. PROVIDE TYPE AND MINIMUM SIZE OF RACEWAY OR CABLE AS INDICATED IN SPECIFICATION OR ON THE DRAWINGS
3. PROVIDE NEUTRAL IN CIRCUIT UNLESS DEVICE SERVED DOES NOT HAVE PROVISIONS FOR A NEUTRAL CONNECTION.
4. MINIMUM SIZE CONDUIT FOR SCHEDULE 80 OR ENT IS ONE STANDARD ELECTRICAL SIZE LARGER THAN INDICATED IN THE SCHEDULE. PROVIDE LARGER CONDUIT WHERE SPECIFICALLY INDICATED OTHERWISE. DO NOT INSTALL PVC INDOORS.
5. PROVIDE SEPARATE, INSULATED EQUIPMENT GROUNDING CONDUCTOR WITH EACH FEEDER AND BRANCH CIRCUIT.
6. PROVIDE ADDITIONAL ISOLATED GROUND CONDUCTOR SAME SIZE AS THE EQUIPMENT GROUND. IN CIRCUITS TO ISOLATED GROUND PANELS OR DEVICES, GREEN WITH YELLOW STRIPE.
7. FOR PANELS WITH 200% NEUTRAL PROVIDE 200% NEUTRAL USING TWO PHASE SIZED CONDUCTORS IF SIZE #1/0 OR LARGER, OTHERWISE PROVIDE (1) #3/0 NEUTRAL.
8. PROVIDE SEPARATE INDIVIDUAL NEUTRAL FOR ALL CIRCUITS EXCEPT LIGHTING CIRCUITS. PROVIDE A DEDICATED NEUTRAL FOR GFCI OR AFCI CIRCUITS.
9. CIRCUIT SIZING BASED ON 600 VOLT 90°C RATED INSULATION. INTERIOR TYPE THHN/THWN-2 OR XHHW-2 (LARGER THAN SIZE #6), FOR EXTERIOR OR BELOW GRADE UTILIZE RHW-2/USE-2 IN CONDUIT ONE SIZE LARGER. SIZING BASED ON 60°C AMPACITIES FOR 100A OR LESS AND 75°C AMPACITIES OVER 100A.
10. FOR SERVICE ENTRANCE CONDUCTORS IT IS NOT REQUIRED TO INSTALL THE GROUNDING CONDUCTOR. THE NEUTRAL CONDUCTOR IS FULL SIZED AND IS BONDED TO THE GROUNDING ELECTRODE CONDUCTOR AT THE TRANSFORMER AND THE SERVICE DISCONNECT.
11. FOR BATTERY CABLES, INSTALL AND GROUP IN PAIRS (ONE POSITIVE AND ONE NEGATIVE CONDUCTOR) MARK POSITIVE CONDUCTOR WITH 5 OVERLAPPING WRAPS OF RED ELECTRICAL TAPE ON EACH END.

EPP

VOLTAGE: 208Y/120 V
3 PHASES, 4 WIRES, 60 HERTZ
INCOMING FEEDER LOCATION:
PANEL MOUNTING: Surface
PANEL LOCATION: ELEC 32

A.I.C. Rating: 22000
MAINS TYPE: MCB
MAINS RATING: 225 A
MCB RATING: 225 A

CKT	Circuit Description	C/B	POLE	A	B	C	A	B	C	POLE	C/B	Circuit Description	CKT
(1) 1	PANEL "EBP"	80 A	3	8988 VA			840 VA			3	20 A	MECH RM CNDS PUMP	2 (1)
3	--	--	--		7133 VA			840 VA		--	--	--	4
5	--	--	--			9973 VA			840 VA	--	--	--	6
7	SPACE	--	--	0 VA			0 VA			--	--	SPACE	8
9	SPACE	--	--		0 VA			0 VA		--	--	SPACE	10
11	SPACE	--	--			0 VA			0 VA	--	--	SPACE	12
13	SPACE	--	--	0 VA			0 VA			--	--	SPACE	14
15	SPACE	--	--		0 VA			0 VA		--	--	SPACE	16
17	SPACE	--	--			0 VA			0 VA	--	--	SPACE	18
19	SPACE	--	--	0 VA			0 VA			--	--	SPACE	20
21	SPACE	--	--		0 VA			0 VA		--	--	SPACE	22
23	SPACE	--	--			0 VA			0 VA	--	--	SPACE	24
25	SPACE	--	--	0 VA			0 VA			--	--	SPACE	26
27	SPACE	--	--		0 VA			0 VA		--	--	SPACE	28
29	SPACE	--	--			0 VA			0 VA	--	--	SPACE	30
31	SPACE	--	--	0 VA			0 VA			--	--	SPACE	32
33	SPACE	--	--		0 VA			0 VA		--	--	SPACE	34
35	SPACE	--	--			0 VA			0 VA	--	--	SPACE	36
37	SPACE	--	--	0 VA			0 VA			--	--	SPACE	38
39	SPACE	--	--		0 VA			0 VA		--	--	SPACE	40
41	SPACE	--	--			0 VA			0 VA	--	--	SPACE	42
						TOTAL PHASE A:		9828 VA					
						TOTAL PHASE B:		7973 VA					
						TOTAL PHASE C:		10813 VA					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	75 VA	100.00%	75 VA		
Power	27820 VA	100.00%	27820 VA	Total Conn. Load:	28615 VA
Receptacles	720 VA	100.00%	720 VA	Total Est. Demand:	28615 VA
				Total Conn. Current:	79 A
				Total Est. Demand Current:	79 A

Notes:

EXISITNG PANEL

EBP

VOLTAGE: 208Y/120 V
3 PHASES, 4 WIRES, 60 HERTZ
INCOMING FEEDER LOCATION:
PANEL MOUNTING: Surface
PANEL LOCATION: BOILER RM 1

A.I.C. Rating: 10000
MAINS TYPE: MCB
MAINS RATING: 100 A
MCB RATING: 80 A

CKT	Circuit Description	C/B	POLE	A	B	C	A	B	C	POLE	C/B	Circuit Description	CKT
1	LIGHT FIXTURES & EXIT	20 A	1	75 VA			180 VA			1	20 A	CHEMICAL TANK	2
3	EXHAUST FAN	15 A	1		100 VA			600 VA		1	20 A	HEAT TRACE	4 (2)
5	RECS & TRAP PRIMER	20 A	1			640 VA			2900 VA	2	35 A	ELEC WATER HEATER	6
7	SPACE	--	--	0 VA			2900 VA			--	--	--	8
9	BOILER	20 A	2		600 VA			5000 VA		3	60 A	ELECTRIC UNIT HEATER	10
11	--	--	--			600 VA			5000 VA	--	--	--	12
13	BOILER FEED PUMPS	20 A	3	833 VA			5000 VA			--	--	--	14
15	--	--	--		833 VA			0 VA		--	--	SPACE	16
17	--	--	--			833 VA			0 VA	--	--	SPACE	18
						TOTAL PHASE A:		8988 VA					
						TOTAL PHASE B:		7133 VA					
						TOTAL PHASE C:		9973 VA					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	75 VA	100.00%	75 VA		
Power	25300 VA	100.00%	25300 VA	Total Conn. Load:	26095 VA
Receptacles	720 VA	100.00%	720 VA	Total Est. Demand:	26095 VA
				Total Conn. Current:	72 A
				Total Est. Demand Current:	72 A

Notes:

NEW PANEL

KEYNOTES:

(1) PROVIDE NEW CIRCUIT BREAKER IN EXISTING SPACE.

(2) PROVIDE GFP CIRCUIT BREAKER WITH 30mA TRIP.

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	MODEL	Voltage	No. of Lamps	LAMP TYPE	MOUNTING TYPE	DESCRIPTION
LP1	H.E. WILLIAMS	39-4-L30-840-A-DRV-UNV/AC(D24)	120 V	-	LED	CEILING	LED LINEAR PENDANT MOUNT WRAP WITH AIRCRAFT CABLE AND CORD.
LP1-ALT1	COLUMBIA LIGHTING	RLW-4-40-VW-FA-W-E-U/CM24SCF3-KIT	120 V	-	LED	CEILING	LED LINEAR PENDANT MOUNT WRAP WITH AIRCRAFT CABLE AND CORD.
LP1-ALT2	LITHONIA LIGHTING	STL4-30L-GZ10-LP840-208XVV	120 V	-	LED	CEILING	LED LINEAR PENDANT MOUNT WRAP WITH AIRCRAFT CABLE AND CORD.
RH	EVENLITE	PRWLED2-MV	12 V	2	LED	WALL	REMOTE EMERGENCY DUAL HEAD OUTDOOR RATED. POWERED FROM INTERIOR EXIT SIGN.
RH-ALT1	HUBBELL LIGHTING	CORD	3 V	2	LED	WALL	REMOTE EMERGENCY DUAL HEAD OUTDOOR RATED. POWERED FROM INTERIOR EXIT SIGN.
RH-ALT2	LITHONIA LIGHTING	ELA-T-QWP-L0309	10 V	2	LED	WALL	REMOTE EMERGENCY DUAL HEAD OUTDOOR RATED. POWERED FROM INTERIOR EXIT SIGN.
X	EVENLITE	TCXCOM-R-U-W	120 V	-	LED	WALL	WALL MOUNTED EXIT SIGN WITH DUAL EMERGENCY HEADS AND DUAL HEAD REMOTE CAPABLE WITH INTEGRAL BATTERY BACK-UP.
X-ALT1	HUBBELL LIGHTING	CCRRC	120 V	-	LED	WALL	WALL MOUNTED EXIT SIGN WITH DUAL EMERGENCY HEADS AND DUAL HEAD REMOTE CAPABLE WITH INTEGRAL BATTERY BACK-UP.
X-ALT2	LITHONIA LIGHTING	LHQM-LED-R-RO	120 V	-	LED	WALL	WALL MOUNTED EXIT SIGN WITH DUAL EMERGENCY HEADS AND DUAL HEAD REMOTE CAPABLE WITH INTEGRAL BATTERY BACK-UP.

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CHECK BY	RG
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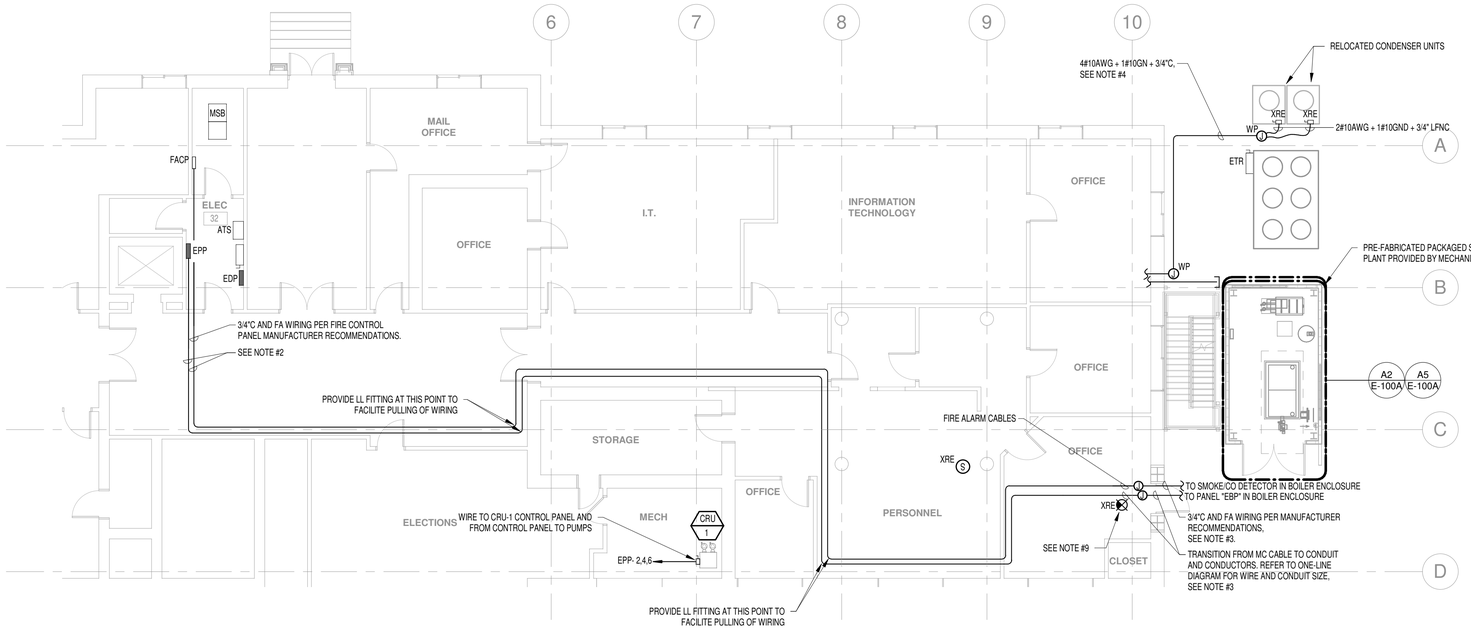
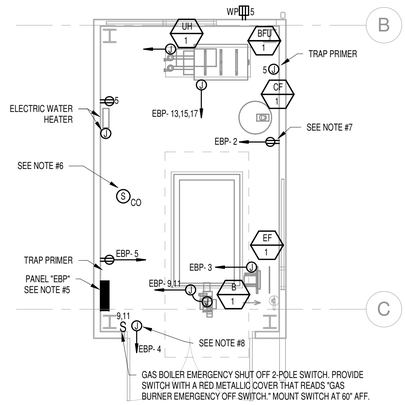
JOB NO.	17117

SCHEDULES, DETAILS, AND ONE-LINE DIAGRAM

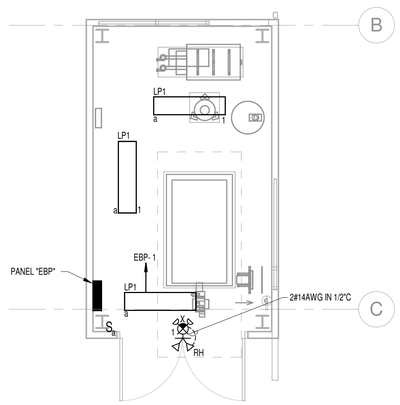
EP601



D1 BASEMENT - NEW CONSTRUCTION - DEDUCT ALTERNATE
SCALE: 1/8" = 1'-0"



A2 BOILER PLANT POWER PART PLAN - DEDUCT ALTERNATE
SCALE: 1/4" = 1'-0"



A5 BOILER PLANT LIGHTING PART PLAN - DEDUCT ALTERNATE
SCALE: 1/4" = 1'-0"

BID ALTERNATE 1 NOTES:

1. THE PRE-FABRICATED BOILER PLANT IS PROVIDED BY THE MECHANICAL CONTRACTOR. THE PREFAB MANUFACTURER SHALL CONSTRUCT THE BOILER PLANT ELECTRICAL POWER SYSTEM AS SHOWN AND DESCRIBED ON DETAILS A2 AND AS ON THIS SHEET AND AS SPECIFICALLY NOTED ON EP601A.
2. PRE-FABRICATED BOILER PLANT MANUFACTURER TO MOUNT ALL PANELS, WIRING, CONDUIT AND OTHER COMPONENTS LOCATED ON WALLS AND CIELINGS ON 1-1/2" BRACKETS TO ALLOW SPACE FOR TWO LAYERS OF FIRE RATED DRYWALL. DRYWALL PROVIDED BY OTHERS.
3. THE FOLLOWING ELECTRICAL SHEETS SHALL BE INCORPORATED INTO ELECTRICAL CONTRACTOR'S SCOPE OF WORK: E-001, ED100, E-100A (EXCEPTION BOILER PLANT U.O.N.), EP601A (AS SPECIFICALLY NOTED).

GENERAL NOTES:

1. FEEDER POWERING PANEL "EBP" SHALL BE INSTALLED ABOVE THE DROPPED CEILING WITHIN FINISHED SPACES . UTILIZE MC CABLE WITHIN THE BUILDING AND TRANSITION TO CONDUCTORS AND EMT WITH COMPRESSION STYLE COUPLINGS AND CONNECTORS WHEN ROUTED OUTDOORS.
2. INSTALL ELECTRICAL CONDUITS EXPOSED BELOW THE DROPPED CEILING. ENSURE CONDUITS ARE NOT DIRECTLY ROUTED BELOW LIGHT FIXTURES, MOTION SENSORS, FIRE ALARM DEVICES ETC. THE CONDUITS SHALL BE INSTALLED TIGHT TO CEILINGS AND WALLS AS POSSIBLE. UTILIZE THREADED RODS AND UNISTRUT. REMOVE AND REINSTALL EXISTING CEILING TILES TO FACILITATE INSTALLATION OF UTILITY HANGERS. COORDINATE ROUTING WITH ALL TRADES AS PLUMBING AND MECHANICAL PIPES HAVE SIMILAR ROUTES.
3. PORTION OF ELECTRICAL PANEL FEEDER AND FIRE ALARM CONDUITS ROUTED OUTDOORS SHALL CLOSELY FOLLOW HVAC AND PLUMBING PIPES TO THE STEAM BOILER ENCLOSURE. BRACKETS TO BE PROVIDED BY MECHANICAL CONTRACTOR AND STRAPS PROVIDED BY ELECTRICAL CONTRACTOR. INSTALL CONDUITS ON BOTTOM PORTION OF BRACKET. REFER TO MECHANICAL DRAWINGS FOR BRACKET DETAIL SHOWING ALLOCATED SPACE FOR ELECTRICAL CONDUITS. COORDINATE INSTALLATION WITH MECHANICAL AND PLUMBING CONTRACTORS PRIOR TO COMMENCING WORK.
4. BRANCH CIRCUIT POWERING RELOCATED CONDENSER UNITS SHALL CLOSELY FOLLOW RESPECTIVE HVAC PIPES. PROVIDE CONDUIT SUPPORT AS NEEDED SUCH AS STRAPS, CLIPS, UNISTRUT ETC. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR. PRIOR TO COMMENCING WORK, CARRY FOR WIRE AND CONDUIT SIZE AS SHOWN, ACTUAL SIZES TO MATCH EXISTING.
5. PANEL "EBP" PROVIDED BY PREFAB MANUFACTURER. FEEDER AND CONDUIT PROVIDED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO CORE BOILER ENCLOSURE IN ORDER TO INSTALL CONDUIT AND TERMINATE FEEDER CONDUCTORS TO ELECTRICAL PANEL.
6. COMBINATION SMOKE/CO DETECTOR PROVIDED AND WIRED BY ELECTRICAL CONTRACTOR. BACK BOX AND CONDUIT WITHIN THE BOILER PLANT BY PREFAB MANUFACTURER. WIRE DETECTOR TO TWO (2) SPARE ZONES IN THE EXISTING FIRE ALARM CONTROL PANEL LOCATED IN THE MAIN BUILDING. UPON DETECTIN OF SMOKE, THE FOLLOWING SHALL OCCUR:
   - -ACTIVATE FIRE ALARM SIGNALING SYSTEM INCLUDING DEVICE SOUNDER BASE (3-TONE TEMPORAL SOUND)
   - -NOTIFY LOCAL FIRE DEPARTMENT VIA EXISTING MASTER BOX
   - -ANNUNCIATE ZONE AT REMOTE ANNUNCIATOR PANEL

   UPON DETECTION OF CO, THE FOLLOWING SHALL OCCUR:
   - -ACTIVATE CO DETECTOR SOUNDER BASE, EMITTING A 4-TONE TEMPORAL SOUND
   - -NOTIFY LOCAL FIRE DEPARTMENT AS A CO SIGNAL VIA EXISTING RADIO MASTER BOX
   - -TROUBLE SIGNAL AT FIRE ALARM CONTROL PANEL SHALL BE ACTIVATED
   - -ANNUNCIATE ZONE AT REMOTE ANNUNCIATOR PANEL

   EXISTING FIRE ALARM ANNUNCIATOR PANEL IS LOCATED IN THE FIRST FLOOR REAR VESTIBULE ENTRANCE (REFER TO DRAWING ED100). LABEL SPARE ZONES AS "BOILER ENCLOSURE SMOKE" AND "BOILER ENCLOSURE CO" (TYPE WRITTEN SIMILAR TO EXISTING). PROGRAM THE SYSTEM TO ACTIVE THE RESPECTIVE INDICATOR LIGHT.
7. CHEMICAL TANK CONTROL PANEL RECEPTACLE.
8. POWER TO THREE (3) SELF-REGULATING HEAT TRACE CABLES EACH SERVING STEAM PIPE, CONDENSATE PIPE, AND DOMESTIC WATER PIPE. EXTEND ALL HEAT TRACE CABLES 6" INTO MAIN BUILDING AND BOILER ENCLOSURE. POWER PROVIDE BY PREFAB MANUFACTURER AND HEAT TRACE PROVIDED BY ELECTRICAL CONTRACTOR. COORDINATE LOCATION AND HEIGHT IN FIELD WITH MECHANICAL AND PLUMBING CONTRACTORS. REFER TO SPECIFICATIONS FOR HEAT TRACE REQUIREMENTS. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR PIPE LENGTH.
9. PENDANT MOUNT EXISTING RELOCATED EXIT SIGN TO ENSURE THE VIEW IS NOT OBSTRUCTED BY THE CONDUITS AND PIPES HANGING BELOW THE CEILING. EXTEND WIRING AND UTILIZE ROUND BACK BOXES AND EMT CONDUIT AS REQUIRED.

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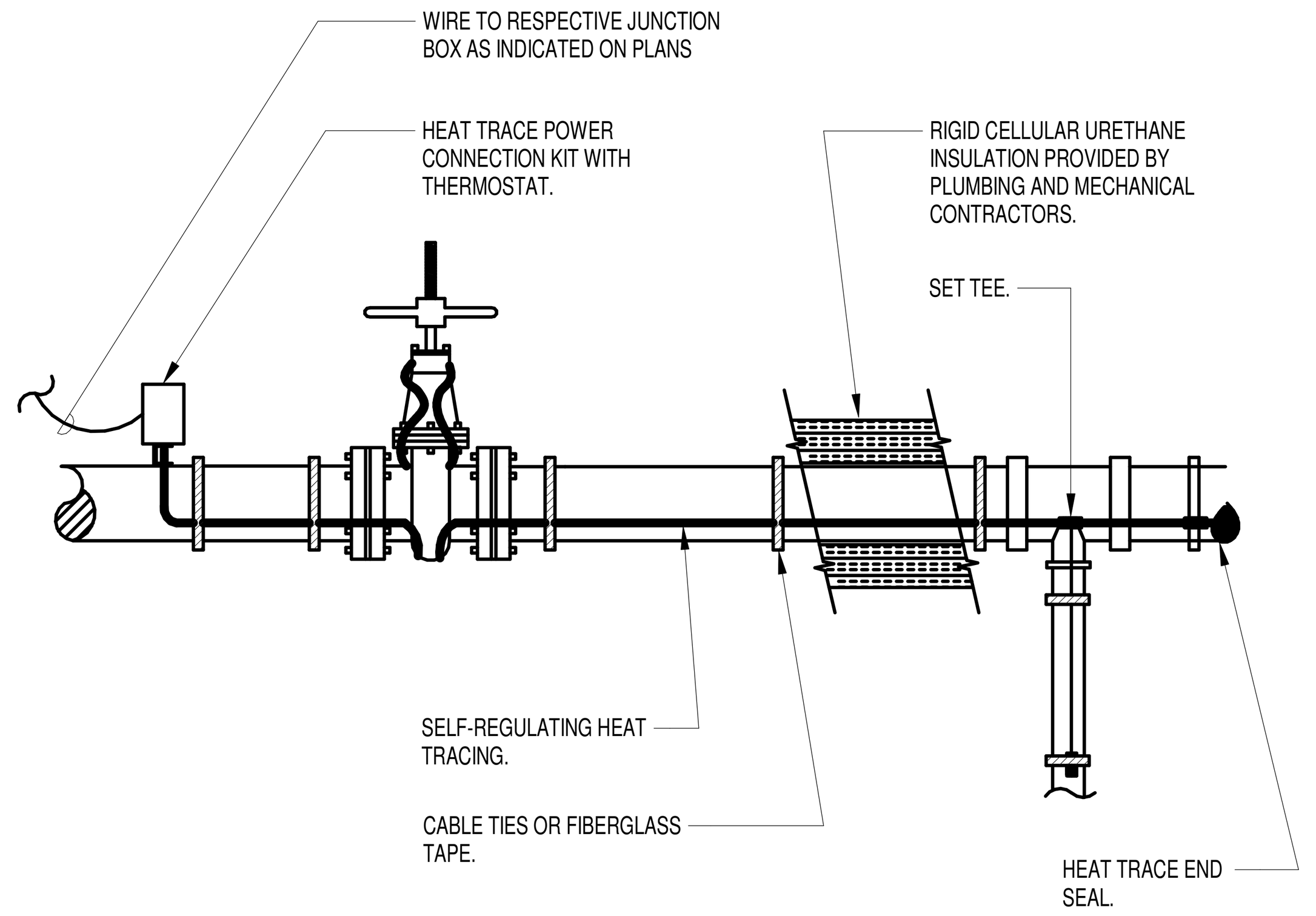
BASEMENT CONSTRUCTION PLAN - BID ALTERNATE 1

KEY PLAN

NORTH

E-100A

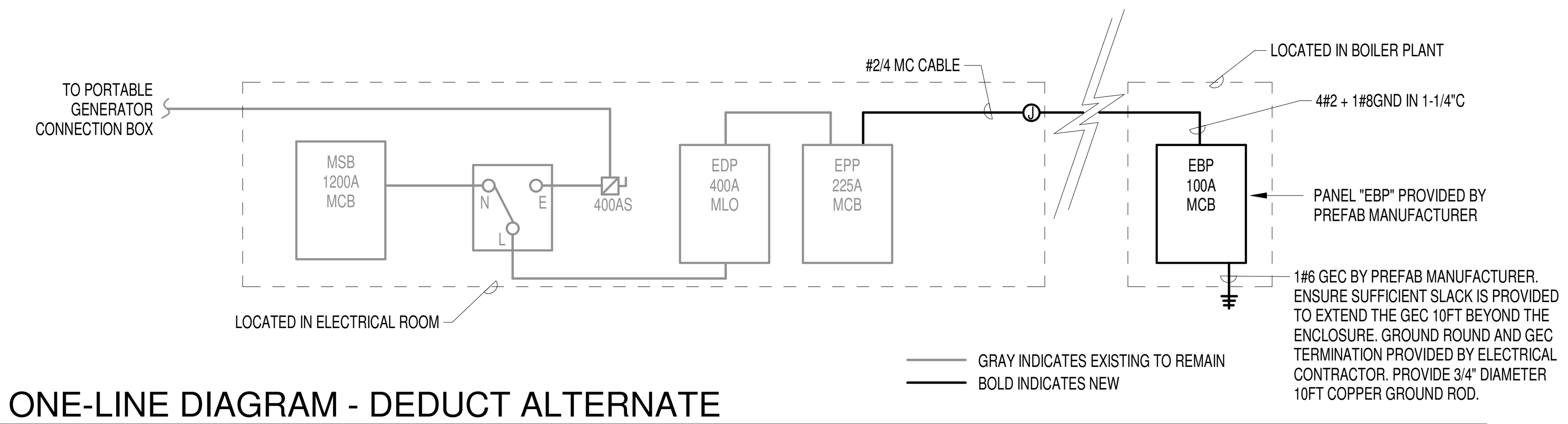


NOTES:

1. COORDINATE HEAT TRACE INSTALLATION WITH PLUMBING AND MECHANICAL CONTRACTORS. ONCE HEAT TRACE IS INSTALLED, INSULLATION TO BE INSTALLED BY THE PLUMBING AND HVAC CONTRACTOR.
2. INSTALL HEAT TRACE PER MANUFACTURER RECOMMENDATIONS.

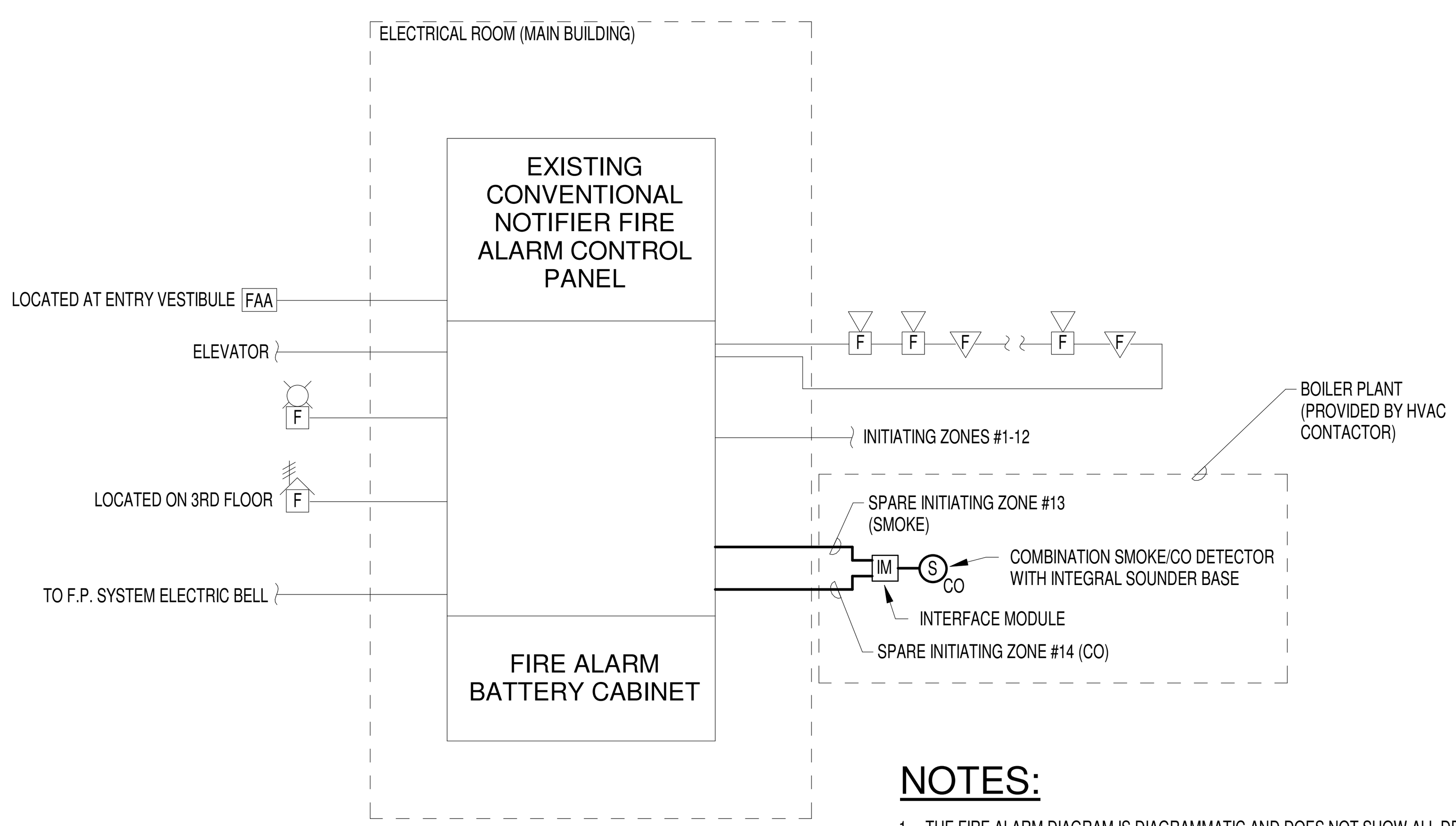
E1 TYPICAL HEAT TRACE INSTALLATION DETAIL

SCALE: NTS



C1 ONE-LINE DIAGRAM - DEDUCT ALTERNATE

SCALE: NTS



NOTES:

1. THE FIRE ALARM DIAGRAM IS DIAGRAMMATIC AND DOES NOT SHOW ALL DEVICES AND WIRING.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE INTERFACE MODULE AND COMBINATION SMOKE/CO DETECTOR. THE DETECTOR BACK BOX AND CONDUIT WITHIN THE BOILER PLANT PROVIDED BY THE PREFAB MANUFACTURER.
3. ALL EXISTING DEVICES AND WIRING SHALL REMAIN AND REMAIN FULLY OPERATIONAL.
4. PROVIDE ALL ADDITIONAL WIRING, DEVICES, PROGRAMMING ETC AS REQUIRED TO INCORPORATE THE NEW COMBINATION SMOKE/CO DETECTOR TO THE EXISTING FIRE ALARM CONTROL PANEL FOR A COMPLETE OPERATIONAL AND CODE COMPLIANT FIRE ALARM SYSTEM.
5. REFER TO DRAWING E-100A FOR FIRE ALARM SEQUENCE OF OPERATIONS.

GRAY INDICATES EXISTING TO REMAIN
BOLD INDICATES NEW

A1 FIRE ALARM ONE-LINE DIAGRAM - DEDUCT ALTERNATE

SCALE: NTS

BRANCH CIRCUITS SCHEDULE

120 OR 277 VOLT 1Φ, 2W. CIRCUITS

CIRCUIT BREAKER	CONDUCTOR
20A-1P	2 #12 & 1 #12 GND. - 3/4"C.
30A-1P	2 #10 & 1 #10 GND. - 3/4"C.
40A-1P	2 #8 & 1 #10 GND. - 3/4"C.
50A-1P	2 #6 & 1 #10 GND. - 3/4"C.
60A-1P	2 #6 & 1 #10 GND. - 3/4"C.

208 OR 480 VOLT 1Φ, 2W. CIRCUITS

20A-2P	2 #12 & 1 #12 GND. - 3/4"C.
30A-2P	2 #10 & 1 #10 GND. - 3/4"C.
40A-2P	2 #8 & 1 #10 GND. - 3/4"C.
50A-2P	2 #6 & 1 #10 GND. - 3/4"C.
60A-2P	2 #6 & 1 #10 GND. - 3/4"C.

208 OR 480 VOLTS, 3Φ, 3W. CIRCUITS

15A-3P, 20A-3P	3 #12 & 1 #12 GND. - 3/4"C.
30A-3P	3 #10 & 1 #10 GND. - 3/4"C.
40A-3P	3 #8 & 1 #10 GND. - 3/4"C.
50A-3P	3 #6 & 1 #10 GND. - 3/4"C.
60A-3P	3 #6 & 1 #10 GND. - 3/4"C.

NOTES:
1. TYPE MC CABLE SHALL INCLUDE FULL SIZE INSULATED GROUND CONDUCTOR. SIZES AS INDICATED IN SCHEDULE.
2. UPGRADE WIRE SIZE ACCORDING TO VOLTAGE DROP CHART

THREE PHASE AND SINGLE PHASE CIRCUIT SCHEDULE NOTES

1. UNLESS OTHERWISE INDICATED, CONDUCTOR SIZING SHALL MATCH THE SIZE INDICATED FOR THE APPLICABLE OVERCURRENT DEVICE. PROVIDE LARGER CONDUCTORS AND RACEWAY WHERE INDICATED.
2. PROVIDE TYPE AND MINIMUM SIZE OF RACEWAY OR CABLE AS INDICATED IN SPECIFICATION OR ON THE DRAWINGS
3. PROVIDE NEUTRAL IN CIRCUIT UNLESS DEVICE SERVED DOES NOT HAVE PROVISIONS FOR A NEUTRAL CONNECTION.
4. MINIMUM SIZE CONDUIT FOR SCHEDULE 80 OR ENT IS ONE STANDARD ELECTRICAL SIZE LARGER THAN INDICATED IN THE SCHEDULE. PROVIDE LARGER CONDUIT WHERE SPECIFICALLY INDICATED OTHERWISE. DO NOT INSTALL PVC INDOORS.
5. PROVIDE SEPARATE, INSULATED EQUIPMENT GROUNDING CONDUCTOR WITH EACH FEEDER AND BRANCH CIRCUIT.
6. PROVIDE ADDITIONAL ISOLATED GROUND CONDUCTOR SAME SIZE AS THE EQUIPMENT GROUND. IN CIRCUITS TO ISOLATED GROUND PANELS OR DEVICES, GREEN WITH YELLOW STRIPE.
7. FOR PANELS WITH 200% NEUTRAL PROVIDE 200% NEUTRAL USING TWO PHASE SIZED CONDUCTORS IF SIZE #1/0 OR LARGER, OTHERWISE PROVIDE (1) #3/0 NEUTRAL.
8. PROVIDE SEPARATE INDIVIDUAL NEUTRAL FOR ALL CIRCUITS EXCEPT LIGHTING CIRCUITS. PROVIDE A DEDICATED NEUTRAL FOR GFCI OR AFCI CIRCUITS.
9. CIRCUIT SIZING BASED ON 600 VOLT 90°C RATED INSULATION. INTERIOR TYPE THHN/THWN-2 OR XHHW-2 (LARGER THAN SIZE #6), FOR EXTERIOR OR BELOW GRADE UTILIZE RHW-2/USE-2 IN CONDUIT ONE SIZE LARGER. SIZING BASED ON 60°C AMPACITIES FOR 100A OR LESS AND 75°C AMPACITIES OVER 100A.
10. FOR SERVICE ENTRANCE CONDUCTORS IT IS NOT REQUIRED TO INSTALL THE GROUNDING CONDUCTOR. THE NEUTRAL CONDUCTOR IS FULL SIZED AND IS BONDED TO THE GROUNDING ELECTRODE CONDUCTOR AT THE TRANSFORMER AND THE SERVICE DISCONNECT.
11. FOR BATTERY CABLES, INSTALL AND GROUP IN PAIRS (ONE POSITIVE AND ONE NEGATIVE CONDUCTOR) MARK POSITIVE CONDUCTOR WITH 5 OVERLAPPING WRAPS OF RED ELECTRICAL TAPE ON EACH END.

EPP

VOLTAGE: 208Y/120 V
3 PHASES, 4 WIRES, 60 HERTZ
INCOMING FEEDER LOCATION:
PANEL MOUNTING: Surface
PANEL LOCATION: ELEC 32

A.I.C. Rating: 22000
MAINS TYPE: MCB
MAINS RATING: 225 A
MCB RATING: 225 A

CKT	Circuit Description	C/B	POLE	A	B	C	A	B	C	POLE	C/B	Circuit Description	CKT
(1) 1	PANEL "EBP"	80 A	3	8988 VA			840 VA			3	20 A	MECH RM CNDS PUMP	2
3	--	--	--		7133 VA			840 VA		--	--	--	4
5	--	--	--			9973 VA			840 VA	--	--	--	6
7	SPACE	--	--	0 VA			0 VA			--	--	SPACE	8
9	SPACE	--	--		0 VA			0 VA		--	--	SPACE	10
11	SPACE	--	--			0 VA			0 VA	--	--	SPACE	12
13	SPACE	--	--	0 VA			0 VA			--	--	SPACE	14
15	SPACE	--	--		0 VA			0 VA		--	--	SPACE	16
17	SPACE	--	--			0 VA			0 VA	--	--	SPACE	18
19	SPACE	--	--	0 VA			0 VA			--	--	SPACE	20
21	SPACE	--	--		0 VA			0 VA		--	--	SPACE	22
23	SPACE	--	--			0 VA			0 VA	--	--	SPACE	24
25	SPACE	--	--	0 VA			0 VA			--	--	SPACE	26
27	SPACE	--	--		0 VA			0 VA		--	--	SPACE	28
29	SPACE	--	--			0 VA			0 VA	--	--	SPACE	30
31	SPACE	--	--	0 VA			0 VA			--	--	SPACE	32
33	SPACE	--	--		0 VA			0 VA		--	--	SPACE	34
35	SPACE	--	--			0 VA			0 VA	--	--	SPACE	36
37	SPACE	--	--	0 VA			0 VA			--	--	SPACE	38
39	SPACE	--	--		0 VA			0 VA		--	--	SPACE	40
41	SPACE	--	--			0 VA			0 VA	--	--	SPACE	42

TOTAL PHASE A: 9828 VA
TOTAL PHASE B: 7973 VA
TOTAL PHASE C: 10813 VA

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	75 VA	100.00%	75 VA		
Power	27820 VA	100.00%	27820 VA	**Total Conn. Load:**	28615 VA
Receptacles	720 VA	100.00%	720 VA	**Total Est. Demand:**	28615 VA
				Total Conn. Current:	79 A
				Total Est. Demand Current:	79 A

Notes:
EXISITNG PANEL

EBP

VOLTAGE: 208Y/120 V
3 PHASES, 4 WIRES, 60 HERTZ
INCOMING FEEDER LOCATION:
PANEL MOUNTING: Surface
PANEL LOCATION: BOILER RM 1

A.I.C. Rating: 10000
MAINS TYPE: MCB
MAINS RATING: 100 A
MCB RATING: 80 A

CKT	Circuit Description	C/B	POLE	A	B	C	A	B	C	POLE	C/B	Circuit Description	CKT
1	LIGHT FIXTURES & EXIT	20 A	1	75 VA			180 VA			1	20 A	CHEMICAL TANK	2
3	EXHAUST FAN	15 A	1		100 VA			600 VA		1	20 A	HEAT TRACE	4 (2)
5	RECS & TRAP PRIMER	20 A	1			640 VA			2900 VA	2	35 A	ELEC WATER HEATER	6
7	SPACE	--	--	0 VA			2900 VA			--	--	--	8
9	BOILER	20 A	2		600 VA			5000 VA		3	60 A	ELECTRIC UNIT HEATER	10
11	--	--	--			600 VA			5000 VA	--	--	--	12
13	BOILER FEED PUMPS	20 A	3	833 VA			5000 VA			--	--	--	14
15	--	--	--		833 VA			0 VA		--	--	SPACE	16
17	--	--	--			833 VA			0 VA	--	--	SPACE	18

TOTAL PHASE A: 8988 VA
TOTAL PHASE B: 7133 VA
TOTAL PHASE C: 9973 VA

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	75 VA	100.00%	75 VA		
Power	25300 VA	100.00%	25300 VA	**Total Conn. Load:**	26095 VA
Receptacles	720 VA	100.00%	720 VA	**Total Est. Demand:**	26095 VA
				Total Conn. Current:	72 A
				Total Est. Demand Current:	72 A

Notes:
NEW PANEL

PROVIDED BY PREFAB MANUFACTURER

KEYNOTES:

(1) PROVIDE NEW CIRCUIT BREAKER IN EXISTING SPACE.
(2) PROVIDE GFP CIRCUIT BREAKER WITH 30mA TRIP.

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	MODEL	Voltage	No. of Lamps	LAMP TYPE	MOUNTING TYPE	DESCRIPTION
LP1	H.E. WILLIAMS	39-4-L30-840-A-DRV-UNV/AC(D24)	120 V	-	LED	CEILING	LED LINEAR PENDANT MOUNT WRAP WITH AIRCRAFT CABLE AND CORD.
LP1-ALT1	COLUMBIA LIGHTING	RLW-4-40-VW-FA-W-E-U/CM24SCF3-KIT	120 V	-	LED	CEILING	LED LINEAR PENDANT MOUNT WRAP WITH AIRCRAFT CABLE AND CORD.
LP1-ALT2	LITHONIA LIGHTING	STL4-30L-GZ10-LP840-208XVV	120 V	-	LED	CEILING	LED LINEAR PENDANT MOUNT WRAP WITH AIRCRAFT CABLE AND CORD.
RH	EVENLITE	PRWLED2-MV	12 V	2	LED	WALL	REMOTE EMERGENCY DUAL HEAD OUTDOOR RATED. POWERED FROM INTERIOR EXIT SIGN.
RH-ALT1	HUBBELL LIGHTING	CORD	3 V	2	LED	WALL	REMOTE EMERGENCY DUAL HEAD OUTDOOR RATED. POWERED FROM INTERIOR EXIT SIGN.
RH-ALT2	LITHONIA LIGHTING	ELA-T-QWP-L0309	10 V	2	LED	WALL	REMOTE EMERGENCY DUAL HEAD OUTDOOR RATED. POWERED FROM INTERIOR EXIT SIGN.
X	EVENLITE	TCXCOM-R-U-W	120 V	-	LED	WALL	WALL MOUNTED EXIT SIGN WITH DUAL EMERGENCY HEADS AND DUAL HEAD REMOTE CAPABLE WITH INTEGRAL BATTERY BACK-UP.
X-ALT1	HUBBELL LIGHTING	CCRRC	120 V	-	LED	WALL	WALL MOUNTED EXIT SIGN WITH DUAL EMERGENCY HEADS AND DUAL HEAD REMOTE CAPABLE WITH INTEGRAL BATTERY BACK-UP.
X-ALT2	LITHONIA LIGHTING	LHQM-LED-R-RO	120 V	-	LED	WALL	WALL MOUNTED EXIT SIGN WITH DUAL EMERGENCY HEADS AND DUAL HEAD REMOTE CAPABLE WITH INTEGRAL BATTERY BACK-UP.

SMMA

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93 Highland Ave, Somerville, MA 02143

MARK:	DATE:	DESCRIPTION:
1	01/17/2020	CONSTRUCTION DOCUMENTS

ISSUE LOG
△ = CLOUDED CHANGE

SCALE	NTS
DRAWN BY	JA
CHECK BY	RG
PROJ.ARCH./ENGR.	CRL
PROJ. MRG.	LBF
JOB NO.	17117

SCHEDULES, DETAILS, AND ONE-LINE DIAGRAM - BID ALTERNATE 1

EP601A